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Rubber Compounding Practice[1]

Carbon Black—Premier Reinforcing Ingredient for Rubber—Theories of Reinforcement by Wiegand, Greider, North, Spear—Consumption of Carbon Black—Manufacture—Physical Properties

WEBSTER NORRIS

THE accepted method of measuring the physical value of vulcanized rubber is to determine the work necessary to stretch it until it breaks. This quantity is called the proof resilience or energy of resilience of rubber. The proof resilience of a pure rubber-sulphur mixing is inadequate for some of the most important applications. This need can only be met by compounding into the rubber mixing those ingredients which possess the specific properties that reinforce the rubber product by adding markedly to its resilient energy. The list of such ingredients is confined practically to carbon black, zinc oxide, magnesium carbonate, clay and glue. The particle size of these materials is of colloidal fineness, yet they are effective in their reinforcing effect in rubber mixings. This is preeminently true of carbon black which chemically inert, non-elastic and without resilience, yet is easily the most important reinforcing material that the rubber compounder possesses.

Theories of Reinforcing

The well known rubber chemist and technologist, W. B. Wiegand, in discussing the reinforcement of rubber stated in a lecture on rubber compounding as an aid to conservation,[2] that it is not clear how rubber is reinforced. The famous English microscopist Professor J. F. Barnard studied carbon black under a violet ray microscope and arrived at 50 to 60 millimicrons[3] as its particle diameter. In other words a pound of carbon black fully dispersed has an area of 50,000,000 square inches. In a tire compound containing 100 pounds of rubber, and 43 pounds of carbon black, there is developed an interfacial surface of two billion square inches. Thus, viewing the rupture of any substance in terms of the work required to expose two fresh surfaces, we can understand the increased strength of reinforced rubber as due simply to this enormous increase in surface energy. More work is required to expose a fresh surface of rubber plus zinc oxide or carbon black than for rubber alone.

H. W. Greider[4] refers to the factors governing the reinforcing effects of pigments as follows:

"For any given pigment the quantity factor determining the degree of reinforcement is the volume ratio between the pigment and the rubber. The other pigment factors include: (1) average particle size, specific surface, (2) wetting by the rubber, adhesion or surface tension, etc., (3) flocculation of the pigment subsequent to its dispersion in the rubber during vulcanization, and (4) particle shape of the pigment. It seems quite possible also that the uniformity or particle size frequency distribution of the pigment may be an additional factor of some importance.

"It appears that for any given toughening pigment the tensile strength is largely influenced by the volume of pigment incorporated, its particle size, specific surface as developed in the initial dispersion, and wetting or adhesion. The ultimate elongation is reduced by increasing volume ratio of pigment to rubber, and, in general, pigments of smaller particle size give lower elongation than is imparted by coarser fillers in the same proportions within certain limits.

"The stiffness or rigidity of the rubber is influenced by flocculation of the pigment, by its particle size, and probably by the degree of wetting of the rubber. Since the pigment particles are of much greater rigidity than the rubber mass, they impart to it, depending upon their shape and degree of attachment to the matrix, a portion of their own rigidity, as is shown by the fact that even coarse, non-flocculated pigments stiffen rubber to a limited extent where incorporated in large amounts.

"Probably the uniformity of the pigment also has some effect on the stiffness of the vulcanizate. The resilient energy (work) capacity of compound rubber probably depends upon all the following factors: particle size, adhesion, flocculation tendencies, uniformity, and particle shape of the pigment, as well as the

American rubber technologists number among their achievements the development of rubber compounds of remarkable resilient energy, rigidity and abrasive wear, chiefly through the use of carbon black.

Thus reinforced, tire tread mileage has been increased from 3,500 *to over* 15,000 *miles. This accomplishment is only one of several outstanding results of research in the rubber industry.*

[1] Copyright, 1927, by Webster Norris. Continued from INDIA RUBBER WORLD, November 1, 1927, pp. 55-57.

[2] INDIA RUBBER WORLD, November 1, 1926, pp. 81-82.

[3] A micron is one-thousandth of a millimeter. It is represented by the symbol μ. The combination μμ represents one thousandth of a micron or a milli-micron.

[4] "The Influence of Glue on the Reinforcing Effect of Light Magnesium Carbonate in Rubber." By H. W. Greider. INDIA RUBBER WORLD, April 1, 1924, pp. 446-8.

volume incorporated, since resilient energy is a composite index of the physical properties above named. It may be supposed that the same thing is true, in a different degree, for the property of abrasion resistance.

"The importance of a high degree of attachment between the particles and the rubber after vulcanization, in its influence on physical properties, is clearly indicated by the fact that lithopone and colloidal barium sulphate, although of very small particle size and satisfactory uniformity, do not increase tensile strength, resilient energy, or abrasion resistance, and influence rigidity much less than would be expected from their particle size, because they lack high adhesion in the vulcanizate."

North's Theory

The data published by C. Olin North[5] afford the compounder a fund of information in regard to the comparative effect of reinforcing and non-reinforcing materials in rubber mixing. In explanation of the reinforcement of the tensile properties of rubber, North conceives the structure of crude rubber as a complicated network closely interwoven and embedded in plastic material. When compounding material is in the net and it is distended there is a strut action which prevents ready change of position. The mixed stock becomes stiffer, less stretchy and its tensile strength as measured on the area at rest is increased because a greater area is presented at break. Another and more important effect is due to the influence of the compounding ingredient on the closeness of weave of the net.

Rubber doubtless contains colloidal aggregates of different lengths. When a coarse compounding ingredient is added, only the long fibers become effective in constructing the network around the particles. Consequently the resulting stock has a loose weave. A typical ingredient of this class is ground barytes. The finer the particle size of the ingredient the more rubber fibers are rendered effective by looping or inclosing the particles and becoming more or less wedged and anchored in place. The resulting stock is, therefore, close grained, resists tearing and has high tensile strength. Carbon black is the best example of this type.

Solid Film Theory

A notable contribution to the theory of carbon black reinforcement is made by Ellwood B. Spear,[6] from the development laboratories of The Thermatomic Carbon Co.

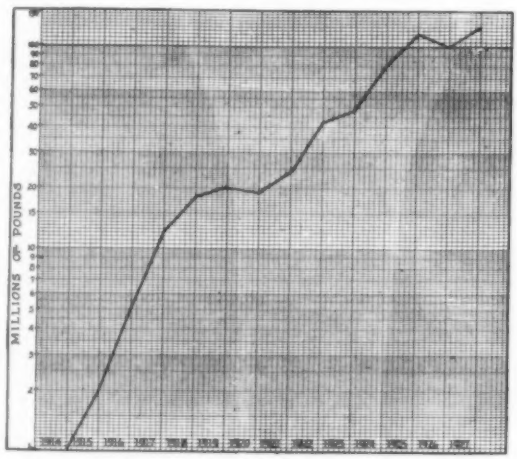
Quoting Dr. Spear, "According to the plastic solid film theory of R. E. Wilson[7] applied to rubber, the films between the solid particles of carbon black are much more resistant to distortion than the matrix would be were no compounding present. This explains at once why the mass is stiffer and why the curves for carbon black stocks partake very nearly of the nature of straight lines. Even for low elongations, these films are thin enough to become operative, whereas in the case of pure gum stocks, the stretching process must proceed a considerable distance before the matrix is thinned sufficiently to form effective films. Finally, these films are very strong hence we should expect the ultimate tensiles of carbon black stocks to be high, which is, of course, in accordance with the facts."

Regarding the cause of increased tensile and decreased elongation in rubber compounded with carbon black Dr. Spear states, "It is believed that the rubber is adsorbed on the surface of the carbon particles and that adsorption is the real cause of the effect of the carbon black in rubber."

Introduction of Carbon Black

Carbon black has displaced all rivals and now holds the premier position as the strongest reinforcing pigment for rubber compounding. Prior to 1914 but little carbon black was used by the rubber industry and then only in small amounts as a coloring material. Little distinction technically was made between carbon black and lamp black, the two compounds being used indiscriminately.[8]

Previous to 1914 white automobile tire treads were the rule. They were reinforced with zinc oxide. The demand for better wearing tires led to the discovery that carbon black was by far



Graph of Carbon Black Consumption

the most effective reinforcing ingredient to be had. This discovery is credited by Godfrey L. Cabot, a well known manufacturer of carbon black, in an address delivered before the National Association of Printing Ink Manufacturers,[9] to the research department of The B. F. Goodrich Co. where in 1915 it was discovered that carbon black incorporated in rubber increased its tensile strength 15 fold, giving it great tractile effect on smooth and slippery pavements, less wear and afforded greater resistance to the oxidizing effect of the atmosphere than any other material yet tried for these purposes. The result was that black tread tires became popular and the demand for carbon black rapidly increased as shown in Table I.

Consumption of Carbon Black

The record of the consumption of carbon black by the rubber industry since 1915 is graphically shown in the above graph plotted from the data in Table I.[10]

TABLE I
Consumption of Carbon Black by the Rubber Industry

Year	Millions of Pounds
1914	1
1915	2
1916	5
1917	12
1918	18
1919	20
1920	19
1921	24
1922	42
1923	48
1924	80
1925	115
1926	100
1927	125

The major proportion of carbon black used in the rubber industry is consumed in the manufacture of tires. The enormous increase in the tonnage required now as compared with that of the pre-war period is explained in part by the fact that black tires previous to the war were reinforced with zinc oxide and colored black with carbon black. Tire treads then contained 28 to 30 parts of zinc and 4 or 5 of carbon black used for color only, while today these proportions are reversed. Zinc oxide is no longer used for reinforcing but now serves to activate the organic accelerators of vulcanization while carbon black amply sustains the role of reinforcer of the rubber.

[5] "The Effect of Compounding Ingredients on the Physical Properties of Rubber." By C. Olin North. Presented before the Rubber Division of the American Chemical Society, at St. Louis, Missouri, April 12-16, 1920, INDIA RUBBER WORLD, November 1, 1920, pp. 98-102.

[6] "Colloid Properties of Rubber and Compounding Ingredients." By Ellwood B. Spear. Colloid Symposium Monograph, 1923, pp. 321-345, with discussion.

[7] Paper read before the Colloid Symposium, Madison, Wisconsin, June 12-15, 1923.

[8] Perrott and Theisen. INDIA RUBBER WORLD, June 1, 1920, p. 581.

[9] INDIA RUBBER WORLD, September 1, 1920, p. 810.

[10] Private communication from Binney & Smith Co., New York, N. Y.

Manufacture and Tests

Carbon black or gas black is the product of the incomplete burning of natural gas with a smoky flame and cooling it by contact with an iron surface upon which the soot accumulates and is scraped off, cooled and conducted away to be bolted and compressed in paper sacks. Owing to its method of manufacture carbon black has a very minute particle size. There are no hard and fast specifications for carbon black. Performance in actual service is the practical test.

The following specifications given are those suggested by the U. S. Bureau of Mines as representing the requirements of the rubber industry.[11]

CARBON BLACK FOR RUBBER COMPOUNDING

CHEMICAL TESTS

Moisture—less than 4 per cent, acetone extract—less than 0.5 per cent, ash—less than 0.25 per cent.

PHYSICAL TESTS

Grit—none. Tinting strength—not less than 90 per cent of the strength of standard.

PRACTICAL TESTS

Rubber mixes are made up containing equal weight of the sample to be tested and of the standard. Mixes are cured under exactly the same conditions. The finished sheet is tested for tensile strength, per cent elongation, toughness, and resistance to abrasion.

Variation in Carbon Blacks

Carbon blacks differ widely in their stiffening effect in rubber mixes. Spear and Moore[12] found the wetting equivalent of carbon blacks a useful qualitative relation affording a fairly reliable index of the stiffening power of carbon in a rubber mix. The wetting equivalent is an arbitrary term and represents the number of cubic centimeters of a neutral pale yellow, raw linseed oil that must be added to 100 grams of a given carbon so that the mass may be pressed into a coherent ball similar to a stiff, dry putty. The oil is added from a burette in small proportions at first and finally drop by drop toward the end. The small balls of carbon are squeezed out and the mass pressed as much as possible with a flexible paint knife. The end point is fairly sharp.

Spear and Moore concluded that the portion of carbon black which causes the high tensile in a rubber mix is probably not the portion that is responsible for the stiffening effect. Also it is quite possible that a third portion takes no part in either effect but acts merely as a diluent.

The chemical and physical properties of carbon blacks in relation to their behavior in rubber compounds are being extensively studied by carbon black manufacturers. It is well known that for some obscure cause blacks occasionally do not exhibit normal reinforcing powers when compounded with rubber. The variations seem to be inevitable because the causes are practically beyond control. Black manufacturers are conducting researches on the fundamentals of their products and developing empirical tests to enable them to identify off-quality product unsuited for rubber work.

TABLE II

Relative Particle Size of Rubber Pigments

Reinforcing Pigment	Surface Developed in Square Inches per Cubic Inch	Particle Surface Compared with Barytes
Carbon black	1,905,000	62
Lamp black	1,524,000	50
China clay	304,800	10
Zinc oxide	152,400	5
Glue	152,400	5
Lithopone	101,600	3
Whiting	60,550	2
Fossil flour	50,800	1.6
Barytes	30,480	1

[11] "Carbon Black, Its Properties and Uses." By G. St. J. Perrott and Reinhardt Thiessen, Chemical Research Laboratory, Bureau of Mines Experimentation. Fresented at the meeting of the American Chemical Society, Philadelphia, Pennsylvania, September 2 to 6, 1919. INDIA RUBBER WORLD, June 1, 1920, pp. 581-2.

[12] "High and Low Stiffening Carbon Blacks." Ellwood B. Spear and Robert L. Moore. Presented before the joint meeting of the Division of Rubber Chemistry and the Akron Section of the American Chemical Society, Akron, Ohio, February 22 and 23, 1926.

Particle Shape and Size

In Table II the particle size of carbon black and a few other compounding ingredients is compared in terms of the surface developed by the particles in one cubic inch. In the last column these areas are compared to that of a cubic inch of barytes as unity showing for example that carbon black offers 62 times as much area in a cubic inch as barytes offers. The average diameter of carbon black particles varies from 0.1 to 0.2 μ up to about 0.6 μ.

Carbon black particles are considered by Spear as having a deeply serrated surface resembling a burr rather than a smooth sphere. Thus accounting for the enormous surface of carbon black which seems to be the chief factor in its reinforcing effect. On this point Spear says:

"It would seem altogether probable that there is a limit to the fineness to which particles of any one substance may be reduced in order to obtain the maximum compounding effect, such, for instance, as reinforcing. For we know of no substance of low molecular weight such as sodium chloride (common salt) in a state of molecular subdivision, that will reinforce rubber. Stated in other words, this means that any substance which will mix with rubber in such a way as to follow the laws of solubility will not reinforce it. On the other hand, it is well established that, within the limits of the ordinary microscope, the reinforcing property of a given pigment is an inverse function of the size of the particles."

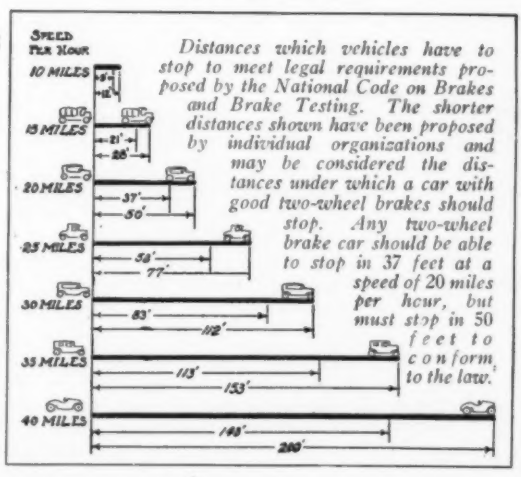
Carbon Black Tire Tread

The following formula represents advanced American practice in the reinforcement of tire tread stock by carbon black.

Smoked sheets	100.0
Tire reclaim	33.0
Carbon black	50.0
Zinc oxide	5.0
Mineral rubber	5.0
Pine tar	1.0
Stearic acid	0.5
Degras	1.0
Accelerator	1.0
Anti-oxidant	1.0

Cure 30 minutes at 295 F.

This stock has a tensile at break of practically 4,000 pounds per square inch, and elongation of 600 per cent.



THE FIRST EIGHT MONTHS OF 1927 SHOW A DECLINE IN THE number of golf balls imported into the United States, according to figures supplied by the Department of Commerce, which gives 2,341,595 the total for 1927 as against 2,676,901 for the same period in 1926. Total imports for the years 1924, 1925 and 1926 are 2,834,340, 2,806,383 and 3,361,248 respectively.

The River Tapajos and Part of the Ford Estate

The Ford Rubber
Amazon

Three Million Seven Hundred
Land to Be Developed by the

By Our Special

IN 1923 a special commission was sent to Brazil by the United States Government to investigate and report on the possibilities of developing the rubber-plantation industry in the Amazon Valley. The commission consisted of a highly efficient technical staff, belonging to the Departments of Commerce and of Agriculture. Among the members were: William L. Schurz, a recognized authority on Latin-American affairs; Carl D. La Rue, professor of botany at the University of Michigan and former botanist for the United States Rubber Co. in Sumatra; C. F. Marbut, chief, Division of Soil Survey, of the Department of Agriculture; James R. Weir, phytopathologist, former director of scientific laboratories of the Culver Military Academy; O. D. Hargis, former general manager, in Sumatra, of the Continental Rubber Co. of New York, and many others, besides geological, geographical, botanical and other technical members, who were sent by the Brazalian Government.

The commission spent nearly a year in the Amazon Valley studying all the conditions of soil, climate, population, labor, health, sanitation, transportation and communication. Besides rubber, other industries and resources were taken into consideration. The report which was published in 1925 showed that in the Amazon Valley there are more than 300,000,000 rubber bearing trees, and presumably this refers to Heveas only. The reason why they are not being exploited is the lack of capital and labor.

After a thorough study of the whole Amazon basin, the report recommends the Lower Amazon, or the State of Pará, and specially the region which comprises the rivers Tapajos, Xingu and Tocantins. The first one of these rivers, the Tapajos, is most highly recommended because of its accessibility to ocean-going steamers. Labor is quite plentiful in the State of Pará, especially in those districts that border the Amazon and the lower reaches of its tributaries. As a rule, the laborer of the Amazon is of good physique, inured to exposure and under proper incentive capable of long-continued effort.

Among those most interested in the Firestone slogan that "Americans should produce their own rubber" was Henry Ford, head of the Ford Motor Co. At the invitation of Dr. Dionsyio Bentes, Governor of Pará, who realized the great advantages of attracting American capital to this state, Mr. Ford sent a commission, which arrived in Pará in March, 1926, to study the conditions, not only of the Amazon Valley, but of the whole of Brazil, economically, industrially, financially, and commercially. On its first trip this commission spent more than three months investigating conditions, and among the many places examined the lands on the Tapajos River drew its attention.

Some time later a second commission representing Ford interests arrived at Pará. It comprised specialists in chemistry, botany, agriculture, and labor organizations. This party went into the jungle to make a thorough investigation of the land in view, which is situated on the right bank of the Tapajos River, between the small tributaries Cupary and Tapacurá. The members traveled on foot several hundred miles through the virgin forest. This region is a high plateau, some two to six miles back from the river, with an altitude varying from a hundred to a thousand feet. These tablelands have a mild semitropical climate, and being almost flat are favorable for mechanical cultivation. They are covered with virgin forests with much valuable timber. The trees are generally of immense size, those not supplying timber often produce other products, such as rubber, balata, gutta percha, cocoa, brazil nuts, gums, balsams, drugs, medicinal plants, vegetable oils, and a great variety of other products. Rubber trees were tested, the soil was examined at various points of the chosen land, and a full report was made to Mr. Ford.

Among all the tributaries of the Amazon, the Tapajos is by far the most healthy and accessible, being navigable by ocean-going steamers for at least two hundred miles, or to the further limit of the Ford estate, as careful soundings have shown.

A third commission arrived to ask for a concession of the land examined on the Tapajos River, and the governments of the Republic and State granted almost complete exemption of all taxes and duties for fifty years. The concession of land comprises 3,700,000 acres (1,500,000 hectares), 150 miles south of the city Santarem, on the Tapajos River, between Cupary and Tapacurá, where rubber plantations will be developed on a large scale.

The Ford enterprise has a great advantage in knowing the way to success by not making the mistakes of others. It was verified that the *Hevea Brasiliensis*, in its natural habitat, the Amazon high plateau, comes into bearing earlier by one or two years than under the best conditions anywhere else in the world, and if scientifically cared for will produce much more latex and so lower the cost of production per acre. A very important factor, also verified, is the natural immunity of the rubber trees in the high lands to all rubber tree diseases. This characteristic is probably the result of natural selection through centuries.

The best rubber tree on the Amazon is what is called the "black hevea," on account of the very dark green color of the leaves and bark. Besides being perfectly immune, it is said this variety produces three or four times more latex than the other two—white and red. This type of Hevea apparently does not exist anywhere else except in the upper regions of the Acre, Madeira and Purus. There are already over half a million seedlings of this black variety in nurseries, ready to be planted out in the Tapajos estate. These were selected and collected by the director of the Manaos Experimental Station, in the Upper Madeira, and brought down nearly a thousand miles and planted near Santarem. In less than ten years eighty thousand acres can be planted in the Ford estate with labor now available in the surrounding region, and a few years later production should average forty million pounds of rubber, at least.

If half of the area owned by the Ford company be planted, the production can be estimated about 375,000 tons of rubber per year, taking as average 500 pounds per acre, which is considered conservative.

It is said that the Ford company contemplates the establishment of rubber manufacturing plants in the State of Pará. All Brazil is enthusiastic over this feature. A new era opens for the Ama-

Concession in the Valley

Thousand Acres of Virgin Rubber Ford Industrial Company of Brazil

Correspondent

zon Valley. Ford's enterprise will give employment to thousands. The population is relatively hard working, honest and sober. Foreigners are here considered as friends, and the population is still more friendly to Americans. The hospitality of the Brazilians is well known.

The Federal and State governments showed their good will in helping along Ford's interests. Notwithstanding the law, passed in the Federal Congress, abolishing exemptions from duties on imported goods, a special amendment was made to grant duty exemptions for a great part of the material, machinery and other articles which the Ford company will have to import from abroad. This act is due to the combined efforts of Dr. Washington Luiz, President of the Republic of Brazil, Dr. Dionysio Bentes, Governor of the State of Pará, Dr. Lyra Castro, Secretary of Commerce and Agriculture, and Dr. Eurico Valle, Federal Senator. Dr. Dionysio Bentes, Governor of Pará, who invited Henry Ford to visit this state, showed the commissions particular attention, helping them in every way possible. In fact, all their requests were granted.

The new company, known as the Companhia Ford Industrial do Brasil (in English, Ford Industrial Co. of Brazil), with headquarters at Belem, capital of the State of Pará, was formed on October 10, 1927, with a capital of about 8,000:000$000, about $1,000,000 in American currency. The capital is divided into 8,000 shares of 1,000$000 (about $120) each. The objects and aims of the concern are to acquire land from the government or from private parties, to plant and harvest rubber, erect and exploit factories for finishing rubber and manufacturing rubber goods; create and exploit all means of transportation, by land, water or air, to trade in all kinds of products and articles as skins, hides, seeds, woods, foodstuffs, etc., cultivate and exploit other products, undertake various commercial and financial transactions, build schools, hospitals, etc.

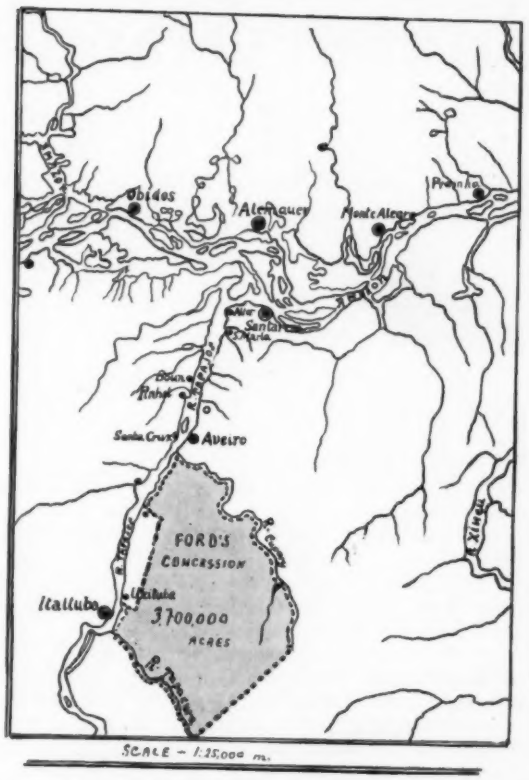
The first directorship, according to the Brazilian law, is composed of the following shareholders: Dr. Samuel MacDowell, W. L. Reeves Blakeley, George H. Pickerell, Jorge Dumont Villares, Julião Ausier Bentes, Edward Lock Neale and Adolpho Ribeiro da Silva.

The Advisory Board is composed of: Julião Ausier Bentes, Edward Lock Neale and Adolpho Ribeiro da Silva.

The shareholders are: Ford Motor Co., Highland Park, Michigan, with 7,942 shares; Henry Ford, Dearborn, Michigan; Edsel B. Ford, P. E. Martin, B. J. Craig and W. L. Reeves Blakeley, each with 10 shares, and O. Z. Ide, Dr. Samuel MacDowell, Jorge Dumont Villares, Julião Ausier Bentes, George H. Pickerell, Gordon C. Pickerell, Edward Lock Neale, Adolpho Ribeiro da Silva, with one share each.

It is understood that the company will begin work at once, the placing of settlements and an extensive campaign against jungle fever occupying probably first place on the program of activities to be commenced.

And so it seems that the old idea of "American imperialism" has passed away. The people now realize that for the improvement of this vast country, though rich in natural products, capital is needed. The Ford concession constitutes one more link welded in the chain of friendship which unites the United States and Brazil.



Official Map of the Ford Concession

WANT RUBBER MOLECULE TAMED

Electricians, while keenly appreciating the rare merits and indispensability of rubber and gutta percha as insulating materials, still hope that rubber chemists will aid them further in their quest of dielectric substances that will stand the severest tests. In a recent address before the Chicago Section of the American Chemical Society, Clarence G. Stoll, vice president of the Westinghouse Electric Co., Inc., said that while insulativity is generally regarded more as a relative than an absolute term, the electrical physicist ever aims to approach the absolute. Wire coated with rubber ordinarily conducts currents with minimum power leakage, but something more is sought.

"In dealing with the distribution of electrical energy for power purposes," Mr. Stoll said, "the plant designer looking for insulating media is really more concerned about their ability to withstand without rupture the potentials imposed upon them than about the energy losses and distortions which sometimes occur through the insulations."

Indicating that the electrical industry would encourage extended research by rubber technologists in insulation, Mr. Stoll said in part:

"We confidently believe that, with the chemists' knowledge of carbon compounds, he will some day doctor up the rubber or resinous hydrocarbons to give us a better material than gutta percha for deep sea cables. It must not absorb water, nor deteriorate under high hydrostatic pressures in salt water. While the chemist is on this problem, he must not forget that the rubber hydrocarbon is still too sensitive and temperamental to endure the service we would like to subject it to in our present structures."

Rubber Manufacturing Industry of the United States

The income tax reports filed by rubber manufacturers with the Treasury Department reveal information of general interest to the rubber industry. The publication of the 1925 report makes this an opportune time to review the data and bring the summary facts to the attention of the trade

E. G. Holt

Chief, Rubber Division, Department of Commerce

THE fairly general prosperity of the industry in 1918-1919, the calamitous losses experienced in 1920-1921, the difficult struggle back to sounder footing in 1922-1924, and the temporary prosperity of 1925, are clearly reflected in Table 1. Since 1919, the rubber industry has not contributed much to Uncle Sam's receipts of income and profits taxes. In the seven year period, 1918-1924 inclusive (disregarding 1925, the paper profits for which were about balanced by losses in 1926), the gross income of the industry was $7,036,178,033, and the net income before Federal taxes was only $203,816,062 or 2.88 per cent. After paying Federal taxes, the net profit was but 1.71 per cent on gross income. This compares with a gross income of $346,600,000,000, and a net profit after paying income and profits taxes of $15,700,000,000, or 4.53 per cent on gross income for all manufacturing industries during the seven years. At the end of 1924 the industry had not wiped out the deficit of 1920 and 1921, incurred chiefly through ill-advised purchases of rubber and cotton just before the price decline in those commodities, one result of which was government regulation of rubber production in British colonies. That the restriction policy was responsible for changing the paper profits of 1925 into an equal deficit for 1926, will doubtless appear when the 1926 income tax figures are published.

CAPITAL STOCK TAX RETURNS OF RUBBER CORPORATIONS

	1925	1924	1922
Number of returns, total	668	683	657
Showing par value common stock	554	590	587
Showing no par value common	108	85	51
Not specified	6	8	19
Assets, total	$960,777,094	973,750,828	[1]
Cash	51,193,230	46,116,459	[1]
Accounts receivable	216,709,031	211,031,174	[1]
Notes receivable	18,221,954	22,177,435	[1]
Inventory	239,946,928	234,172,648	[1]
Fixed property (real estate, buildings, equipment)	434,705,951	460,253,112	347,880,343
Liabilities	$413,562,279	444,461,172	[1]
Current accounts payable	111,561,057	96,440,972	[1]
Current notes payable	110,281,543	144,410,290	[1]
Long term bonded debt	186,267,266	199,347,447	94,330,141
Long term mortgages	5,462,411	4,262,463	13,793,245
Surplus reported, total	$313,971,225	277,158,124	[1]
Corporations reporting par value	102,360,156	120,108,305	[1]
All other corporations	211,611,069	157,049,819	[1]
Deficit reported, total	29,906,284	25,667,331	[1]
Capitalization reported, total	$585,378,086	634,495,708	[1]
Corporations reporting par value, common	415,622,151	544,170,715	511,725,703
All other corporations, preferred stock only	169,755,935	90,324,993	[1]
Fair value of capital stock, total	$609,818,911	574,542,001	480,761,641
Corporations reporting par value	$375,466,780	440,920,308	368,504,196
Corporations reporting no par	$233,673,918	133,042,981	105,770,645
All other corporations	$678,213	578,712	6,486,800
Taxable fair value	$606,948,191	571,131,194	472,943,593
Tax	$606,948	571,131	472,944

[1]Item not reported.

The number of rubber corporations filing capital stock tax returns is not comparable with the number reporting for income tax for the reason that consolidated returns are permitted for closely affiliated corporations for income tax purposes, whereas separate and distinct capital stock tax returns are required for each corporation regardless of stock ownership or corporate affiliations.

Table 1 includes statistics reported by manufacturers of celluloid, ivory, shell and bone with net income as shown below. Such companies have on the whole been prosperous; the inclusion of the statistics therefore causes the profits for the rubber industry to be slightly greater than they would be if these extraneous statistics could be eliminated, which is unfortunately impossible, their gross income not being separately reported.

The number of companies and their net income are as follows: 1918, 42, $813,073; 1919, 53, $4,249,129; 1920, 70, $1,595,971; 1921, 76, deficit $1,436,251; 1922, 75, $214,946; 1923, 90, $4,783,497; 1924, 98, deficit $206,340; 1925, not separately reported. Similarly, figures for these companies are included in other tables with the exception of Table 4.

It cannot be gainsaid that the struggle for survival and the strenuous competition of the past few years have brought blessings in their wake to the consumer of rubber goods, even if the manufacturer has not prospered. In order to visualize this, it is only necessary to compare the tire output of the industry with the column in Table 1 on gross income. The number of automobile casings produced in recent years has been reported by the Bureau of the Census as follows: 1919, 32,835,509; 1921, 27,297,919; 1923, 45,425,591; and 1925, 58,784,073 In 1919, tires and tubes made up 66.2 per cent of the value of all rubber goods produced; in 1921, 63.9 per cent; in 1923, 59.4 per cent, and in 1925, 65.7 per cent. The number of casings produced increased 79 per cent in 1925 over 1919; the gross income of the rubber industry increased but 40 per cent, and 1925 was a year of far above average prices for recent years. Economies in manufacturing costs through use of improved labor saving devices, and through increased knowledge of compounds, have been tremendous, but competition has kept profits at a minimum. Overcapacity for tire production is no longer so serious, however, as in 1922-23, when with plant facilities for producing around 75,000,000 tires annually, the market called for only about 45,000,000 tires. The expense of adding mold equipment for balloon tires was beyond the resources of some small manufacturers, and the declining market for high pressure tires has forced some companies out of the field. Probably plant facilities for tire production are now little greater than in 1923, while the market now calls for about 65,000,000 tires a year.

One of the heavy plant expenses to tire manufacturers is the item of mold equipment. The introduction of balloon tires necessitated new molds, and the frequent addition of new sizes of tires has made this item of expense abnormally high. Simplification of

tire sizes is desirable for both manufacturing and merchandising efficiency. Reduction in manufacturing costs which would result from standardization of tire sizes would normally be passed on to consumers, owing to the competition situation. The tire industry is working on the problem of standardization through the Rubber Association of America, Inc., and the Society of Automotive Engineers, with the cooperation of the Division of Simplified Practices of the Department of Commerce.

TABLE 1
INCOME OF RUBBER MANUFACTURING COMPANIES
(Dollar statistics in thousands—000 omitted)

	Number of Corporations	Gross Income	Net Income Before Tax	Income and Profits Taxes
1925	638	$1,469,746	$109,024	$15,411
1924	638	1,122,250	41,555	5,661
1923	607	1,078,894	24,361	2,839
1922	593	942,648	17,366	2,285
1921	641	637,846	—(96,460)	815
1920	671	1,038,316	—(4897)	3,748
1919	660	1,166,858	122,109	29,871
1918	565	1,049,362	99,780	38,341

The corporations reporting net income are shown separately from those reporting a deficit in Table 2. In the 1918-1924 period as a whole, only 69.8 per cent of the companies reported net income annually, on the average. The gross income of these companies was 77.6 per cent of the total for the industry, showing that on the average large companies were in stronger financial position than small concerns. Only in 1921 and 1922 did the average gross income of companies reporting net income fail to exceed by a decisive margin that of companies reporting deficit.

TABLE 2
COMPANIES REPORTING NET INCOME COMPARED WITH COMPANIES REPORTING DEFICIT
(Dollar statistics in thousands—000 omitted)

	Reporting Net Income				Reporting Deficit			
		Gross Income		Net		Gross Income		
	No.	Total	Average	Income	No.	Total	Average	Deficit
1925	349	$1,373,494	$3,935	$122,965	289	$95,861	$331	$13,941
1924	325	937,869	2,885	56,900	313	184,380	589	15,344
1923	273	908,765	3,328	45,924	334	170,129	509	21,562
1922	284	558,984	1,968	41,929	309	383,664	1,241	24,562
1921	196	112,146	572	5,101	445	525,699	1,181	101,561
1920	279	797,343	2,857	26,677	392	240,973	614	31,575
1919	407	1,107,239	2,720	126,831	253	59,618	235	4,722
1918	412	1,036,684	2,516	101,595	153	12,677	82	1,814

Although the rubber industry operated at a large net profit in 1925, only 54.7 per cent of the corporations reported net income, and only 39.3 per cent reported taxable net income. Table 3 shows that large corporations as a whole were prosperous during 1925, 15 companies alone (2.4 per cent of the total) accounting for 82 per cent of the total net income for the industry before subtraction of deficit. This was the result of fortuitous future contracts for crude rubber used in 1925. Subsequent trade reports indicate that a number of these companies failed to achieve equally good results in 1926.

TABLE 3
RUBBER CORPORATION RETURNS FOR 1925 BY SIZE OF NET INCOME

Income Classes	Number of Returns	Net Income
Under $2,000	98	$90,880
$2,000—$5,000	48	154,846
$5,000—$10,000	38	278,555
$10,000—$25,000	45	758,272
$25,000—$50,000	25	884,610
$50,000—$100,00	25	1,801,039
$100,000—$250,000	28	4,622,598
$250,000—$500,000	17	6,665,583
$500,000—$1,000,000	10	7,096,421
$1,000,000—$5,000,000	10	20,106,732
Over $5,000,000	5	80,506,317
Reporting net income	349	$122,965,853
Reporting no net income	289	[1] 13,941,445
Total	638	$109,024,408

[1] Deficit.

The number of rubber manufacturing corporations in the United States who file income tax reports fluctuates from year to year. Unfortunately, the official reports include returns from manufacturers of celluloid, ivory, shell, and bone under the general classification of rubber manufacturers, but their number is separately reported, and they can therefore be eliminated in considering the numerical strength (or weakness) of the industry. In 1925 the published reports do not show figures for Table 3.

The total number of separate companies shown in Table 4, reached its peak in 1919, then declined steadily until 1924, when the number once more increased. The tire industry, however, which represents over 80 per cent of the total in value of products, did not follow the general trend. The number of companies specializing in tire production reached its peak only in 1922 after the industry had passed the worst of its crisis; since 1922 the number of tire companies has been considerably reduced by consolidations and failures, and the condition of the industry has been such that few have had the temerity to engage in tire manufacturing as a new enterprise. Several manufacturers who quit making tires in 1922-23 engaged in production of other rubber goods; the number of manufacturers engaged in other lines of manufacture increased coincidently with the drop in the number making tires.

TABLE 4
NUMBER OF RUBBER MANUFACTURING CORPORATIONS

Type of Product	1924	1923	1922	1921	1920	1919	1918
Tires	134	147	180	179	169	130	108
Boots, shoes and garments	28	25	17	24	26	39	31
Belting and hose	13	(Included with tires before 1924)					
Other rubber goods	365	345	321	362	406	438	384
Total	540	517	518	565	601	607	523

A close examination of Table 5 shows that the industry earned profits in the 1920-1924 period only on lines other than tires, and that tire manufacturing was carried on at a net loss for the five years. On the average, only 31 per cent of the corporations classified as tire manufacturers (including belting and hose companies before 1924) reported net income, an average of 69 per cent reporting deficits. The percentage of corporations classed as manufacturers of rubber footwear and clothing that reported net income averaged 60 per cent for the period; and 54 per cent of companies manufacturing other rubber goods operated at a profit. Tire companies reported net income of $108,545,058 for the period 1918-1924 against a total deficit of $110,086,788; for footwear and clothing companies net income totaled $6,724,093 against a deficit of only $1,433,416; 8 belting and hose companies in 1924 reported net income of $5,977,926, with 5 companies reporting deficit of $167,368; other rubber manufacturers had a total net income of $259,916,276 for the seven years against a total deficit of $85,673,744. The change from production of tires to other lines in 1923 by some manufacturers would appear to have been dictated by sound judgment, and the trend in some tire companies toward expansion of lines by adding footwear, mechanical rubber goods, or sundries departments in recent years also appears well founded. These changes naturally have reduced the extreme competition in tires, but they have, also naturally in the economic sense, increased competition in other lines. The net result thus far is a general approach toward greater stability in the industry.

TABLE 5
CORPORATIONS CLASSIFIED BY PRODUCTS
(All dollar statistics in thousands—000 omitted)

	1924	1923	1922	1921	1920	1919	1918
Tires, Hose and Belting[1]							
Number reporting net income	56	29	53	28	32	66	7
Amount of net income	$19,518	$12,602	$7,752	$944	$4,893	$50,287	$28,500
Number reporting deficit	91	118	127	151	137	64	31
Amount of deficit	$5,420	$12,459	$17,816	$56,033	$15,219	$2,413	$894
Boots, Shoes and Garments							
Number reporting net income	14	12	9	8	16	32	23
Amount of net income	$317	$811	$663	$316	$1,397	$1,943	$1,276
Number reporting deficit	14	13	8	16	10	7	8
Amount of deficit	$92	$117	$99	$647	$420	$7	$51
Other Rubber Goods							
Number reporting net income	203	169	177	122	186	264	287
Amount of net income	$36,414	$27,571	$32,971	$3,049	$18,648	$70,327	$70,936
Number reporting deficit	162	176	144	240	220	174	97
Amount of deficit	$8,976	$8,831	$6,319	$42,652	$15,792	$2,277	$826

[1] The number of belting and hose companies and their net income in 1924 is stated above in the text.

Rubber corporation receipts and disbursements, distributed by sources of income and nature of deductions, are summarized for the 1922-1925 period in Table 6. Information is also available concerning disbursements for 1918-1921 as shown in the table; the data is not strictly comparable with more recent years but is included for the sake of completeness.

TABLE 6
DISTRIBUTION OF INDUSTRY RECEIPTS AND DISBURSEMENTS
(All dollar statistics in thousands—000 omitted)

	1925	1924	1923	1922
Receipts, total	$1,469,747	$1,122,681	$1,079,781	$943,251
Gross sales	1,422,911	1,103,685	1,060,663	923,235
Gross profits from sales	350,759	285,501	266,420	236,081
Profits other than from sales	23,907	1,585	2,119	1,766
Interest rents and royalties		8,049	6,810	7,198
Miscellaneous income		8,102	8,673	9,839
Tax-exempt income	22,930	1,279	1,516	1,312
Disbursements, total	1,337,793	1,079,847	1,053,904	924,672
Cost of goods sold	1,072,152	818,165	794,243	687,154
Compensation of officers	[1]	9,543	8,976	8,486
Interest	23,253	27,963	28,103	25,182
Taxes other than income and profit taxes	[1]	12,317	14,607	11,608
Depreciation, authorization and depletion	27,436	28,464	24,001	18,949
Miscellaneous expenses	214,952	183,395	183,974	173,293
Net profits before tax	131,954	42,834	25,877	18,579

GROSS INCOME AND DISTRIBUTION OF DISBURSEMENTS 1918-1921

	1921	1920	1919	1918
Gross income, total	$637,846	$1,038,317	$1,166,858	$1,049,362
Disbursements, total	734,306	1,043,214	1,044,749	949,582
Cost of goods	529,614	813,002	794,115	745,383
Compensation of officers	9,051	9,390	9,589	8,813
Interest	23,329	16,904	13,288	17,367
Domestic tax	7,031	6,279	6,969	5,060
Depreciation, authorization and depletion	14,686	12,475	22,371	25,894
Miscellaneous expense	150,595	185,164	198,417	147,065
Net profits before tax	—(96,460)	—(4,897)	122,109	99,780

[1] Item not reported.

Table 7, which compares receipts and disbursements for the rubber industry, distributed as percentages of total receipts, with receipts and disbursements for all manufacturing industries, shows several points of interest especially in the distribution of disbursements. As is natural in view of the extremely low profits of the industry in 1922 to 1924, total disbursements constitute a larger percentage of total receipts than in the case of total manufacturing industries, but there are other indications of greater import.

TABLE 7
RUBBER INDUSTRY COMPARED WITH TOTAL MANUFACTURING
1923-1925
Analysis of Receipts and Disbursements as Percentages of Total Receipts

	1925		1924		1923	
	Total Mfg.	Rubber	Total Mfg.	Rubber	Total Mfg.	Rubber
Receipts, total	100.00	100.00	100.00	100.00	100.00	100.00
Gross sales	93.70	96.81	95.26	98.31	95.70	98.23
Gross profits from sales	20.65	23.87	22.42	25.43	26.14	25.12
Profits other than from sales	5.63	1.63	2.02	.14	2.05	.20
Interests, rents and royalties			.82	.71	.72	.63
Miscellaneous income			1.31	.72	.93	.80
Tax-exempt income	.67	1.56	.59	.12	.60	.14
Disbursements, total	93.26	91.02	94.30	96.19	93.07	97.60
Cost of goods sold	73.05	72.95	72.84	72.88	70.68	73.56
Compensation of officers	[1]	[1]	1.80	.85	1.71	.83
Interest paid	1.02	1.58	1.13	2.49	1.09	2.60
Taxes other than income and profits	[1]	[1]	.94	1.10	.89	1.35
Depreciation, amortization and depletion	[2]2.48	[2]1.87	2.61	2.54	2.53	2.22
Miscellaneous expense	16.71	14.62	14.98	16.33	16.17	17.04
Net profits before tax	6.74	8.98	5.70	3.81	6.93	2.40
Net profits after tax	5.85	7.93	4.91	3.31	6.07	2.13

[1] Not separately reported.
[2] Not including amortization.

The cost of goods sold averages 1.4 per cent higher for the rubber industry in the 1922-1925 period than for all manufacturing industries. This reflects the keen competition between rubber manufacturers, and probably also relatively greater efficiency in manufacturing methods since gross profits from sales compare favorably with other industries. Compensation for officers is relatively low in rubber manufacturing but interest paid on bonded indebtedness, borrowed money, etc., averages much higher than for other industries. Rubber corporations pay higher than average local taxes. Depreciation and amortization expenses compare favorably, but the rubber industry has unduly high miscellaneous expenses, except in 1925.

In spite of the distressing period through which the industry has been passing since 1921, some companies have been able to distribute dividends to shareholders, although the number is understood to be quite limited. The amount of stock dividends distributed is only about one-sixth as great as the cash dividends; except in 1922, stock dividends have been very limited. Available details of dividends paid are shown in Table 8.

TABLE 8
DIVIDENDS PAID SHAREHOLDERS IN RUBBER CORPORATIONS.
1922-1925
(Dollar Statistics in Thousands—000 Omitted)

	All Corporations		Corporations Reporting Net Income		Other Corporations	
	Cash	Stock	Cash	Stock	Cash	Stock
1922	$11,172	$8,052	$8,193	$8,045	$2,978	$6
1923	15,681	2,272	13,969	2,248	1,712	23
1924	16,009	1,227	15,279	1,137	729	90
1925	33,083	1,170	32,697	1,152	365	17

In Table 9 the number of income tax reports received from rubber corporations in 1918 and 1925 is distributed by states. In numerical strength, New England and South Eastern States are about the same in 1925 as in 1918; the Middle Atlantic, Middle Western, South Western, and Pacific Coast States show an increased number of companies, and the Western States show a lower number of companies. The leading states, by number of corporations, are New York, Ohio, New Jersey, Massachusetts, Illinois, Pennsylvania, California, Connecticut, and Wisconsin; only for Massachusetts was the number lower in 1925 than 1918: these states reported 79.5 per cent of the total number in 1925 against 76.6 per cent in 1918.

TABLE 9
RUBBER CORPORATIONS BY STATES, 1925 AND 1918

States	1925	1918	States	1925	1918
New England:			Middle Atlantic:		
Connecticut	19	17	Delaware	1	1
Maine	3	2	Maryland	6	6
Massachusetts	70	76	New Jersey	80	59
New Hampshire	1	1	New York	124	101
Rhode Island	10	8	Pennsylvania	32	25
	103	104		243	192
South Eastern:			Middle Western:		
Alabama	3	1	Illinois	34	34
Georgia	4	2	Indiana	12	12
Kentucky	5	2	Michigan	13	12
North Carolina	2	2	Ohio	105	96
South Carolina	..	2	Wisconsin	17	8
Tennessee	1	6		181	162
Virginia	3	3			
West Virginia	2	1			
	20	19	South Western:		
Western:			Arkansas	1	1
Colorado	6	5	Louisiana	3	2
Iowa	9	12	Oklahoma	3	3
Kansas	1	1	Texas	9	5
Minnesota	3	6		16	11
Missouri	11	14			
Montana	..	2			
Nebraska	5	4	Pacific:		
South Dakota	1	..	California	26	17
Utah	..	1	Oregon	3	5
Wyoming	1	..	Washington	7	9
	37	45		36	31

CARBON BLACK CONTROL

In the past it has been considered sufficient guarantee of uniformity in carbon black that it be shipped from a single plant and that the conditions of manufacture in that plant be kept as uniform as possible. The universal search for causes of variation in the finished rubber has prompted many chemists to investigate variations in carbon black. Variations well beyond the limits of experimental error have been found even in a single shipment.

The laboratory staff of Godfrey L. Cabot, Inc., Boston, Massachusetts, has appreciated the importance of these variations, and after much investigation has proved that the variations are inevitable, because it is impossible, under the present methods of manufacture, to offset the effects of the weather even with the most diligent operating control.

A simple laboratory test has been devised which can be quickly applied to a small sample and permit the detection of all carbon black which will not give the proper tensile, high modulus, abrasive resistance and curing properties desired in high class rubber work.

Practical Tire Retreading

BUFFING REBUILDING VULCANIZING

Worn tires will deliver additional mileage equal to that already given if they are reprocessed before the fabric is exposed

WHILE it would appear that the perfectly made tire should be the one to break down in all its component parts simultaneously, or nearly so, it is well known that the average tire and especially the better grades, when worn to the breaker strip, will deliver many more miles of service providing a new tread and sidewall are correctly applied at the proper time. The proper time for retreading is before the tread is worn to the breaker strip, and before moisture and grit have penetrated the plies, thus weakening the fabric structure so that recovering the tire with rubber would be a useless expense. Passenger bus owners and those concerns which supply tires on a "cost per mile" basis readily appreciate the value of frequent examination and servicing to obtain every possible mile of wear before the tire is removed as worn out. Tires thus serviced and repaired have been known to deliver 30,000 miles and upward before being finally scrapped.

From the first comparatively crude methods a definite standard of repairing and retreading has been developed by which the present day repairman may be guided in his work. Special tools and appliances have been designed for the individual repair shop so that the work may now be accomplished with the utmost efficiency and despatch. However, it does not necessarily follow that good repairs will be made, unless the repairman has had some knowledge and experience in tire engineering and construction sufficient to enable him to know, in the first place, whether a tire is worth repairing and secondly, how best to do the job.

From the time when pneumatic tires first came into general use the desire of the owners to obtain the maximum mileage created a demand for repairs which has resulted in the establishment of hundreds of shops devoted to retreading and other types of tire repairing. That this branch of the industry is now widespread and on a solid foundation is attested by the fact that makers of rubber manufacturing equipment are offering a wide variety of items in tire repair equipment. And it cannot be successfully denied that such highly developed equipment has contributed tremendously to the uniformity and stability of tire repairs.

Tire manufacturers have been interested in this field from the beginning, not only because it offers a valuable source of revenue in supplying repair materials to repair shops but also because it is necessary that repairs be made in such a way that no discredit will be reflected on their product, otherwise the user might charge the lack of mileage to the tire manufacturer. In the past when most of the repair shops were conducted as side lines by dealers in tires and accessories, repairs were not made in any standard and uniform manner but according to the notions of the individual making the repairs. Today, however, repairmen are educated not only as to the best practice in this work but to know whether a tire was worth repairing, whether it would return to the owner, in mileage, the cost of the repair. Several of the larger tire manufacturers maintain repair schools in charge of experts whose duty it is to impart not only the theory but the technique of tire repairing to those desirious of engaging in this business. Elements of merchandising are also included in the course so that at its completion the students are presumed to be competent to establish themselves in business. The result has been that retreading and repairmen have established themselves in business with a permanency born of confidence in their ability to estimate and perform the work required of them. Benefits have also accrued to the manufacturers who made such instruction and training possible in that a more permanent market for their repair materials has been developed.

The development of the pneumatic tire through all its stages has also resulted in the training of men whose knowledge of tire construction has been gained by practical experience in tire manufacturing plants. The knowledge thus acquired covers not only repair work but includes a knowledge of compounding ingredients and the manufacture of materials which go into repairs and retreads. Such a man is Arthur R. Colvin, executive head of Colvin & Servis, Inc., Rahway, New Jersey. Colvin became deeply interested in rebuilding and retreading tires and together with Leslie Williamson, one of his present associates and a man of long practical experience in tire manufacturing, evolved certain theories relative to retreading which proved most successful when put into actual practice and resulted in exceptional mileage. Convinced that a profitable business in retreading could be built up by employing these methods, he and his associates established the C & S factory early in the present year. The original idea was to purchase tires classed as worn out through the regular channels of supply, retread the selected carcasses and market them through dealer connections. While this represents the bulk of their business, many customers supply carcasses which are retreaded for them on a custom basis.

In retreading tires for resale the first and one of the most important steps is the selection of the carcass. Each is carefully inspected for breaks in the fabric structure, rim cuts, punctures or any blemish which would affect the subsequent operation of the tire and those about which there is any doubt are rejected. Tires with small fabric breaks or punctures are acceptable for retreading as experience has shown that these do not constitute a detriment if properly repaired. Inspection is facilitated by the use of a spreader which is applied to the beads and opens the tire so that the whole interior surface is exposed. Carcasses showing evidence of ply separation are rejected as these would not stand up well enough to warrant retreading. All carcasses are thoroughly

dried before being further processed but those which have punctures through which moisture may have penetrated into the plies are given a special drying treatment which thoroughly evaporates the moisture. Extreme care is exercised in this respect as any moisture remaining in the tire through vulcanization would be quite apt to cause ply separation.

Tires accepted for processing are next taken to the buffing department, where the sidewall and tread are removed rapidly, without generating excessive heat by a buffer designed by Colvin and Williamson. This machine which is shown in the illustration consists of a heavy cast iron base containing a motor that drives a shaft and chuck similar to a tire building machine. The buffer wheel comprises a number of rodlike cutters each about one-quarter inch in diameter and faced off on an angle. These are fitted into a hub mounted directly on the shaft of a constant speed motor. This assembly, in turn, is mounted on a double hinged swinging bracket which can be so manipulated that the teeth or cutters may be set at any angle to the tire. The chuck on which the tire is mounted is driven by a variable speed motor and is rotated in a direction opposite to that of the buffer. The buffer operates at a comparatively slow speed but is so designed that removal of the old stock is very rapid. The completed job has the appearance of having been rasped and leaves a clean and moderately roughened surface.

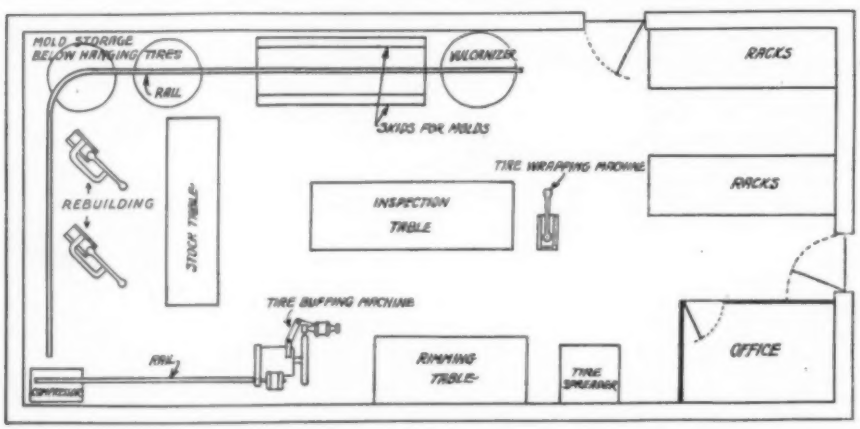
Before buffing, an airbag is inserted in the tire and curing rings are attached. The bag is moderately inflated so that the tire is firm enough to prevent any squeegee action under the buffer cutters. Great care is taken in buffing so that that excessive heat will not be generated and thus scorch the carcass.

The buffed tire is next mounted on a tire building stand, a view of one battery of this being shown in the picture. Here the tire remains for all work prior to vulcanizing. The tire is next gaged in order to ascertain the amount of makeup stock required, so that it will properly fill the mold. Different makes of tires of the same size vary considerably in cross section diameter and these must be built up to a common dimension in order that there will be no excessive overflow or light spots in tread and sidewall in the carcass the stock is applied in layers, each layer being gassed and stitched to secure maximum adhesion. This method has been found to produce better results than when the tread is built up before being applied to the tire. The average time consumed for buffing and replacing the tread and sidewall stock and making the tire ready for vulcanizing is about 35 minutes.

Vulcanizing is the next step in the process and it may be said here that the same difficulties are encountered as in molding newly made tires. Light spots are apt to occur due to air trapping and the molds are so designed that with the aid of a proper lubricant, trapped air can be made to flow to the vents with least resistance. A lubricant made of tar soap has been found to be quite satisfactory for the purpose. In retreading slight discoloration due to lubrication is not so objectionable as it would be in a new product as purchasers of retreads are not usually so critical. The molds are of the steam jacketed type equipped with a quick locking ring, and specially designed for retreading work. The bottom half is attached to a floor stand with the top half hinged to it and counter-balanced with weights for ease in operation. The mold is so made that the steam ways occur only at points where vulcanization is desired. This prevents undue overcuring of the carcass and results in longer life for the retreaded tire. Vulcanizing for the average sized tire is accomplished in 40 to 50 minutes at 297 degrees F. The shortest possible curing on retreads is obviously desirable and while some tires have been given a 20 minute cure at a somewhat lower temperature, as an experiment, tests have not as yet been completed which will yield accurate data on the wearing qualities.

It may be mentioned here that all vulcanizing is done in full circle molds, it being found that retreads wear better when cured in this manner than with the usual three-piece mold. The finished product also presents a better appearance owing to the absence of ridges in tread and sidewall which are likely to result from using a three-piece mold.

After vulcanizing, the tires are given pretty much the same treatment as newly made tires. Each is carefully inspected and those showing blemishes which would affect the sale are classed as



The Layout of an Ideal Tire Retreading Plant is Shown in the Opposite Plan that Was Especially Designed for this Article by DeMattia Bros., Clifton, New Jersey.

finished tire. Thus it will be seen that certain makes of tires will have more stock in tread and sidewall when rebuilt under the C & S process than was on the tire as originally made. Three coatings of rubber cement of a mixture which experience has demonstrated to be the best for the purpose are next applied, suitable drying intervals being allowed between applications. It has been found that mounting the tire on a warm airbag shortens the drying interval considerably and results in the stock adhering closer with less rolling and stitching although greater speed is required of the operator in laying on the stock.

The ingredients in tread and sidewall stock are identical and are compounded with a view to producing a tough, well wearing material which can be cured in the shortest time. Tread and sidewall are calendered to a gage of approximately one-eighth inch, slit to the proper widths and rolled up in liners. In building up on seconds and no further work is done on them. The first quality tires have the flash or overflow trimmed from the register points and the outside is then given a liquid wash which evens the color and brightens the appearance. Were it not for the word "Retread" molded into the sidewall of each tire, it might easily be mistaken for a new tire.

Exceptional mileage has been the rule with these retreads rather than the exception. Tires which have been run for 12,000 to 14,000 miles and then reprocessed are still in service, to the writer's knowledge, after having run an additional 8,000 miles. It is interesting to note that most tires of the better makes give excellent results after being retreaded. However, certain makes, probably due to the method of manufacture, soon develop fabric breaks after retreading, which results in pinched tubes and it has been found a waste of time and money to reprocess these tires.

Shudder-Proofing Motor Yachts

The Normal Vibrations in Motor Boats Can Be Absorbed by Rubber Shock Insulation, Thereby Adding Greatly to the Pleasure of Cruising, by Eliminating Disagreeable Tremors of the Hull

THE field for rubber shock insulators has been successfully extended in their application to shudder-proofing motor yachts. The first application of this kind was made on the fast cruising house boat *Nashira*. This craft measures 81 feet over all, 79 feet 9 inches on the load water line, 14 feet breadth and 4 feet draft. It is equipped with a pair of Wright 500 h.p. engines capable of driving the boat 28 miles per hour. The entire power plant is supported on rubber shock insulators. These are under compression or static load as in the case of their use on automobiles, buses and motor trucks. The installation of the rubber insulators was made two years after the yacht was built and their adoption did not alter the hull construction, engine or controls in any way.

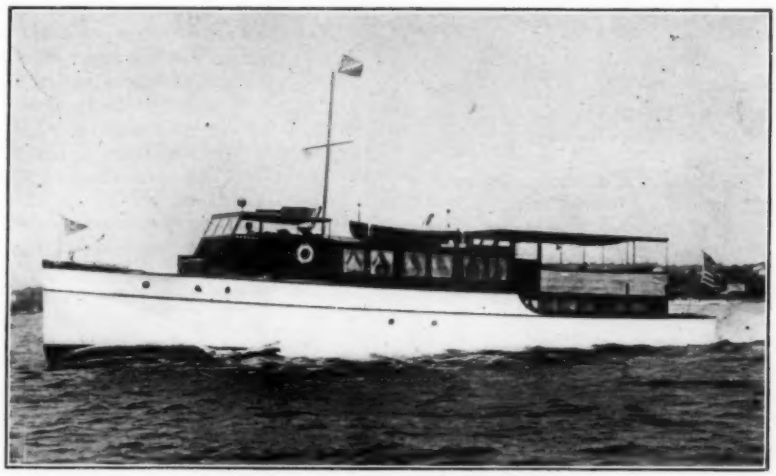


Fig. 1—Cruising House Boat "Nashira"

As illustrated in Figure 2, the engine is held directly to the engine bed stringers by four rubber blocks on each side of the motor, thus eliminating vibration to the hull at this point. Aft of the motor is a stuffing box at the base of a water-tight bulkhead dividing the engine room from an after stateroom. This stuffing box is shock insulated to keep the noise out of the bulkhead, eliminating vibration. Further along the propeller shaft are two shaft bearings which are equipped with rubber blocks. As the shaft leaves the bilge there is the customary stuffing box which is insulated the same as the bulkhead stuffing box. Three struts are used to support the shaft aft of the stuffing box. The forward and middle struts have a single supporting arm while the rear strut is "V" shape. The top portions of these three struts are cast long enough to go through the planking of the hull and are held by shock insulators inside the hull.

The details of the engine insulation are shown in Figure 3, which is a vertical section and plainly shows the arrangement of the rubber housing and timbers under the motor bed.

The motor has four legs integral with the aluminum crank case. These feet rest on a bronze stringer which runs the full length of the motor and is, in turn, imbedded on its lower edge in rubber. The lower part of the stringer fits in rubber, of which there are four pieces on each side of the motor held by brackets to the engine bed stringer.

Stuffing Box Assembly

The stuffing box mounting Figure 4, is carried in the shaft through the bulkhead. The rubber, under compression, fits around a flange which holds the stuffing box completely in the rubber and allows the shaft, stuffing box and all to move up and down with every movement of the shaft practically without transferring any vibrations to the bulkhead. In this way the vibrations which come into the shaft are eliminated from the hull of the vessel.

Shaft Bearing Assembly

Figure 5 shows an arrangement of shaft bearing or steady bearing in order to take the whip and to hold the shaft in place. This is an arrangement in which the shaft has a full alining floating bearing. This bearing is held in a bronze carrier which has two arms held in rubber compressed in two housings.

A function of this steady bearing is to keep the shaft from whipping and setting up torsional vibrations. This bearing guides the shaft and does not pass any of the vibrations into the hull of the vessel because they are absorbed in the rubber which is

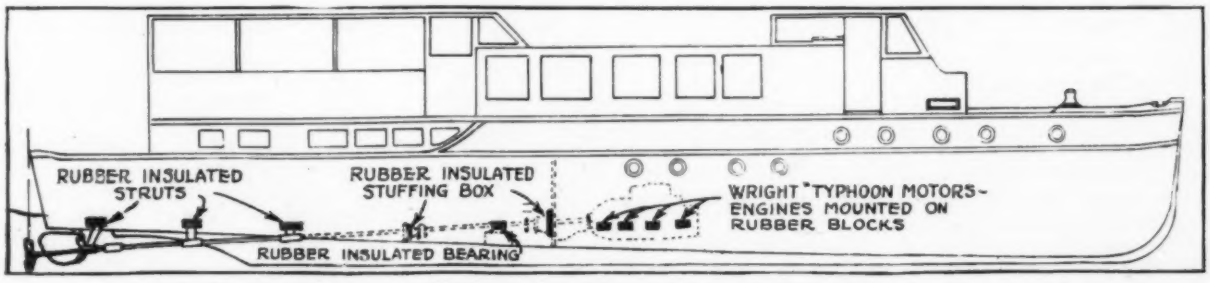


Fig. 2—Side Elevation of "Nashira" Showing Shock Insulation of Power Plant and Propeller Shaft

compressed and entirely enclosed in the housing resting upon heavy crosswise timbering.

Propeller Shaft Assembly

Figure 6 is a side view of the strut. In describing the strut mounting, there are two things to consider: first, insulating the

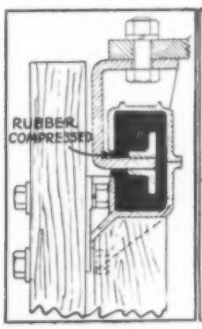


Fig. 3—Engine Bed Assembly

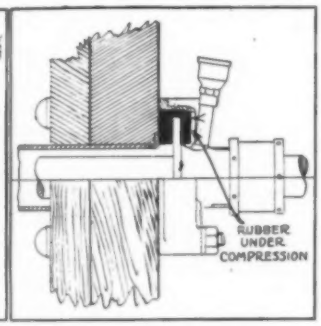


Fig. 4—Stuffing Box Assembly

strut from the hull of the vessel and, second, making the strut water-tight as it passes through the hull. By this method of supporting, no vibration of the shaft can get to the hull without first being largely absorbed by the compressed rubber, as indicated in Figure 6.

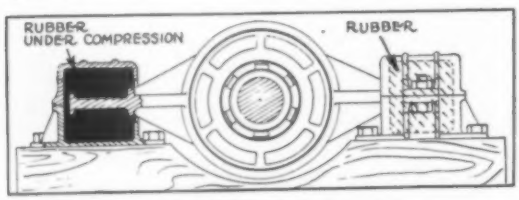


Fig. 5—Shaft Bearing Assembly

Moving picture records made by a vibration measuring instrument at cruising and top speed of the *Nashira* give convincing proof that the application of rubber shock insulators absorb virtually all of the power plant vibrations and prevent them

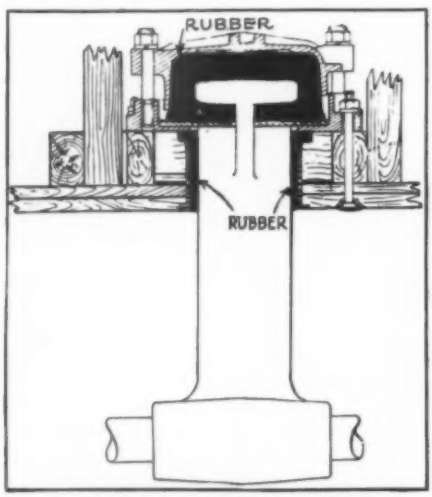


Fig. 6—Propeller Shaft Strut Assembly

from communicating any shuddering to the hull. The installation is so successful on the *Nashira* that five similar craft have been equipped in the same way.

The practical value of this system is so great that it will probably find widespread acceptance in marine power plants for even larger vessels than those already equipped.

Synthetic Rubber

Dr. P. Straus

The German Dye Trust recently announced the discovery of a method for the manufacture of synthetic rubber which may ultimately result in a product of commercial and industrial practicability. While creating some interest synthetic rubber is not new to the chemist. As long ago as 1908, Tilden exhibited before a meeting of the British Association in York, England, samples of rubber formed by the spontaneous polymerization of isoprene.

Isoprene is the basis of rubber and the price at which it can be secured is the only question involved in the commercial production of synthetic rubber. Isoprene can be produced by various methods. for instance, through destructive distillation of turpentine. Such methods might be commercially feasible when the price of crude rubber is extremely high, as in the case of war. To produce synthetic rubber commercially to sell at a price competitive with the natural product, a consistently cheap and plentiful supply of isoprene or its homologs would be necessary. This is only obtainable from the primary tars of low temperature by-products carbonization of bituminous coal.

This carbonization, commonly called "low temperature distillation of bituminous coal" is a new industry well on in the stage of development in this country as well as in Europe. Presumably the German Dye Trust will produce synthetic rubber by the well known Bérgius process of hydrogenation of coal, but according to available information, there have been perfected two processes which are superior to the Bérgius process insofar as the production of isoprene is concerned.

In addition to the low temperature carbonization processes there are the plants of the Consolidation Coal Co., Fairmont, West Virginia, now in operation, and the proposed plants of the International Combustion Engineering Co., New Brunswick, New Jersey, and the Lehigh Briquette Co., Fargo, North Dakota.

While these last three plants do not operate at temperatures exactly favorable to the preservation of isoprene, they are apt to produce limited quantities of it. With sufficient isoprene available in this country a synthetic rubber industry is bound to develop and the industries here and in Germany will be established during the same period. The processes of the Royal Dutch Shell Co., as well as of the Coal Conversion Corp. of New York are likely to produce isoprene in consistently substantial volume at a lower figure than can be accomplished by the Bérgius method.

From a scientific point of view these technical developments abroad and in this country are very important and it seems as if we were getting closer to the time when America will at least hold its own against Europe in scientific chemical development. America, having bituminous coal resources second to none and low temperature carbonization processes superior to those of foreign countries, has little or nothing to fear from foreign domination, so far as synthetic production of rubber, gasoline, methanol and other liquid and solid hydro-carbons are concerned.

PILOT BALLOON REACHES RECORD ALTITUDE

A record balloon run has been reported by the United States Department of Agriculture, Weather Bureau, Salt Lake City, Utah, the ascent having been made at that station on October 19, 1927. The balloon used was similar to the rubber balloons that are released twice a day for the purpose of determining the direction and velocity of the upper air wind currents. They are made of raw gum rubber, measuring six inches in diameter, uninflated, and about thirty inches in diameter when inflated with hydrogen.

The balloon was released at 8:18 A. M. and its course followed through a theodolite for 194 minutes before it finally burst. Calculations showed that at the time of bursting the balloon had gained an elevation of 35,010 meters and that its horizontal distance from the point where it was released was 70,200 meters. The record, it is thought, has been equaled only twice anywhere in the last fifteen years.

Equipment for Curing Clay Blown Tires

A New and Unique Tire Curing System to Displace Expensive Airbags

THE system of inflating pneumatic tires with clay rendered plastic or fluid with water has been reduced to a practical factory working system since the general method was first described.[1]

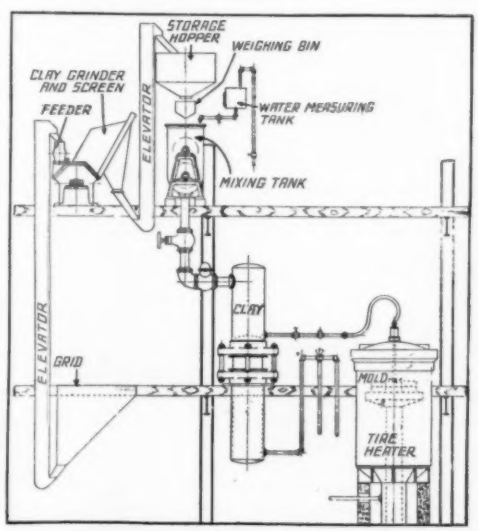
The process as now applied by means of the equipment herein illustrated and described, entirely eliminates the need of air or water bags in curing pneumatic tires. It solves the problem of expanding a tire against the mold by the use of a distending material in direct contact with the interior surface of the tire without the use of a special coating of rubber on the inner face of the tire. The new method allows the steam to enter the core and curing the tire from the inside as well as from the outside, thus producing a better and speedier cure.

The plastic material used is ordinary ceramic clay, preferably Atlas ball clay plasticized with about sixty pounds of water to one hundred pounds of clay and one-half pound of water glass which gives a freely flowing mixture of about the consistency of heavy cream. It is prepared and applied by the equipment arranged diagrammatically as shown in the drawing, occupying space in a basement and first and second floors.

This equipment comprises a number of machines functioning in the following order. Beginning at the lower left side of the factory plan, the floor is provided with a grid opening into a hopper where the fresh or used dry clay is received and is elevated to the second floor where it discharges through a feeding device into a grinding mill. After grinding the clay is automatically screened and drops into a second elevator which raises and discharges it into a storage hopper. From this the operator draws it by gravity into a weighing bin. The weighed amount is then deposited in the vertical mixing tank into which is also discharged a definite amount of water from a measuring tank. In the mixer, clay, silicate of soda and water are commingled by power agitation to a freely flowing mixture. This is discharged from the bottom of the mixer through a 6-inch vertical pipe, with globe and check valve, into a specially designed receptacle on the floor below. This piece of apparatus is provided with an hydraulically operated plunger, the displacement action of which expels the liquefied clay from the storage receptacle, through a two inch pipe, check valve and flexible connection. The latter is coupled to the center of the cover of the vulcanizer and provides access for the clay mixture to the separate mold connections for inflating the tires to be cured.

ABOVE is a cross section of a mold and core for the making of clay blown tires. The clay mixture is forced into the tire within the mold under 200 pounds pressure.

The clay is prepared and applied to the tires in the heater by means of the equipment shown below.



A cross section of a tire mold and clay inflating core is herewith illustrated. The core is made in four sections, each chamber being closed at the ends. The outer or tread surface of the core is provided with an asbestos filter screen held between perforated brass plates to permit the escape of the water in the clay mixture under the 200 pounds pressure with which it is forced into the tire to expand and solidify it against the mold.

The clay being of the proper consistency originally, does not require to lose a very large part of its moisture to change from a freely flowable condition to one sufficiently stiff to provide the necessary mechanical support for holding the tire plies compacted against the mold. This will be readily understood by those who have observed that it is the last small quantity of water which changes a batch of concrete from a stiff to a freely flowable condition.

The further freeing of the clay from moisture by the heat of vulcanization causes the clay to become still stiffer so that when the tire is completely cured and the core is removed the clay is so solidified that it flakes off readily from the tire and from the core, leaving them clean. After vulcanization the clay is highly absorbent and can be worked for re-use without grinding. It is therefore returned through the grid in the cleaning floor to repeat the cycle through the mixer, etc. to the tire molds in the vulcanizer.

In preparation of the tire for curing, the sections are assembled in the tire, bead rings applied, and the core with the tire on it is placed in a mold for curing. The heater connection is attached to valve stem and clay is turned in as if air or water were used. Although the clay between the core and casing is stiff and dry when the cure is completed, that in the valve stem and heater connections is fluid as no escape of moisture is possible.

A perfect cure is procured in a comparatively short time. The clay

[1] INDIA RUBBER WORLD, March 1, 1927, p. 322.

being moist and porous, is a good absorbent of air and gases generated while curing. No special coating of the inside of the tire is used with this process. In fact, tires can be cured with the bare cords exposed and the tires will come out as smooth inside as when built. Another advantage is the convenience in curing tires with large cross-sections and small rim diameters, as the cores, being in sections, can be more readily inserted and removed than airbags.

The equipment for handling the fluid is standard. No air compressor is needed. All that is required is a clay pulverizer, a regular paddle mixer, and an intensifier or accumulator that will supply two hundred pounds pressure.

Although the labor cost of the clay blown system of tire curing is about the same as that where air or water bags are used the expense of the bag is eliminated. The cure is absolutely uniform throughout the tire because the steam enters the core through its tongue and freely circulates in each section of the core. The clay costs $15 to $20 a ton and it can be used indefinitely.

Laursen Water Cure Process for Inner Tubes

THE patented mechanism of the Laursen water cure process for vulcanizing inner tubes covers the construction, heating system and temperature control of a single vulcanizer, and also for a modification in which two vulcanizers are coupled together for alternate operation. A single horizontal vulcanizer is shown in lengthwise section in Figure 1.[1] It is closed at one end and has a removable door at the opposite end. The shell is double, the intervening space being provided for the circulation of steam for heating the water contained within the inner shell of the vulcanizer.

The somewhat complex arrangement of piping comprises five lines. The first or water line includes a circulating pump B by which water drawn from a hot well C is discharged into the vulcanizer A through pipe D entering the top of the heater where the water is distributed from a perforated pipe the entire length of the vulcanizer from which it returns to the well C, thus maintaining a continuous flow of hot water. The second pipe line, E admits steam to the jacket space for maintaining the curing temperature of the circulating water. Through a branch pipe F, cold water can be admitted to the vulcanizer.

The third pipe line G is arranged to admit steam to the bottom of the heater. The fourth pipe line H admits steam to the vulcanizer for distribution from a perforated pipe lying on the bottom of the heater. The fifth pipe line, I, admits compressed air from a tank J to the heater. Pipe I is provided with a regulating valve adapted to close automatically when the pressure exceeds 150 pounds per square inch. A temperature and pressure control system operated by instruments K, a vent pipe L with adjacent safety relief and control valves complete the operating equipment.

The inner tubes, mounted with ends sealed to exclude the water from entering between the tubes and mandrels are supported on racks and run into the heater. When the latter is filled with hot water its temperature is controlled thermostatically by temperature bulbs strategetically located. A quantity of soapstone is placed in the heater before beginning vulcanization and the rubber is softened by preliminary steam heating to 212 degrees F. for about three minutes. After vulcanization the tubes are cooled slowly by spraying with water.

In the modified apparatus shown in cross section in Figure 2,[2] the heat contained in the water is used for a succeeding vulcanization. The apparatus comprises a pair of vulcanizers A and B or a vulcanizing chamber A and a storage chamber C with means provided for transferring the heating water from one chamber to another at substantially vulcanizing temperature and for supplying additional heat to replace any loss involved in the transit from chamber to chamber. Similar water circulating, heating and regulating pipe systems are installed for the same purposes as indicated in the description of the single vulcanizer.

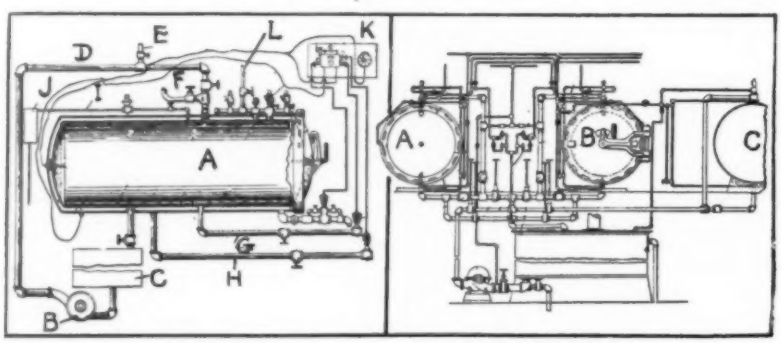


FIG. 1—SINGLE CHAMBER FIG. 2—DOUBLE CHAMBER

Laursen's Inner Tube Vulcanizer

WHEN RECLAIM BEATS CRUDE IN AGING

Reclaimed rubber, according to F. Boiry in the *Revue Générale Caoutchouc*, ages better than new rubber cured to the same high coefficient of vulcanization. Nevertheless it is advised that reclaimed rubber should not be made from cured rubber having an unduly high coefficient of vulcanization, and to get the best aging effects it is also important not to cure too long any compound having a high proportion of reclaim. Extremely good aging may be obtained with a compound having a high proportion of reclaim by skillful mixing, and products may perish much more slowly than those containing only crude rubber. Inasmuch as residual alkali induces early deterioration of reclaimed rubber or its products, it is important that regenerated rubber made by the alkali process be washed to the maximum. The reclaims that score best in aging are those that are practically alkali-free.

[1] British patent No. 276,430.

[2] British patent No. 276,431.

Dealers' Stocks of Automobile Tires As of October 1, 1927[1]

Survey Shows More Dealers Are Concentrating on One Make—Average Number of Casings Per Dealer Reveals Increase Over Preliminary Report

FINAL statistics compiled by the Rubber Division show the following stocks of automobile casings, inner tubes, and solid tires held by dealers reporting on October 1, 1927, as compared to October 1, 1926. The final average number of casings per dealer is 57.6, an increase of 1.7 over the average in the preliminary report issued on October 13.

Analysis of reports received in the present survey shows that this year a much smaller percentage of the dealers hold stocks of less than 10 tires than on October 1, 1926.

The number of dealers reporting stocks of solid or cushion tires on October 1, 1927, was 1,671, and the number of such tires reported on hand was 43,605, an average of 26.1 tires per dealer. This compares with 1,992 dealers on October 1, 1926, reporting 47,560 tires, or 23.9 tires per dealer.

Dealers were asked to report whether they were handling one, two, three, or more makes of tires. Analysis of the reports shows more dealers concentrating sales efforts on one make than in preceding surveys. The total number of dealers reporting October 1, 1927, was 32,965, of which 16,016, 48.59 per cent, handle one make. The total number reporting October 1, 1926, was 37,151, and of these dealers 44.82 per cent, 16,652, handled one make. The percentage for October 1, 1925, was 41.64 per cent, 14,392, from a total of 34,565.

On October 1, 1927, 38.9 per cent of total dealers reported that they sold automobiles; 77.5 per cent, gasoline; 56.4 per cent, batteries; 69.7 per cent, tire repair materials; 64.2 per cent, repair inner tubes; 13.0 per cent, equipment for vulcanizing, and 70.3 per cent operate air compressors. Of the total number of dealers reporting October 1, 1926, 40.7 per cent sold automobiles; 75.7 per cent, gasoline; 53.0 per cent, batteries; 67.7 per cent, tire repair materials; 63.7 per cent, repair inner tubes; 12.5 per cent, equipment for vulcanizing. On October 1, 1925, 39.0 per cent of total dealers reported that they sold automobiles; 77.9 per cent, auto accessories; 74.9 per cent, gasoline; 65.7 per cent, tire repair materials; 2.4 per cent operated a solid tire press; 29.0 per cent operated tire repair departments, and 53.7 per cent operated air compressors.

The number of dealers reporting, 33,548, with 1,933,867 tires on hand, or 57.6 per dealer, is an increase over the number for 1926, which was 37,439 dealers, 1,866,770 tires, an average of 49.9 per dealer. Balloon casings were reported on by 23,699 dealers with 726,627 tires on hand, 30.7 per dealer, a higher average than the 19.8 for 1926. The 103.1 average for inner tubes and 26.1 average for solid and cushion tires also topped the 1926 averages of 93.8 and 23.9 respectively.

Pennsylvania led with the number of dealers reporting, 2,778, the same state showing the largest number of tires on hand, 137,435; while Florida's average of 117.7 per dealer was the highest average of any state.

DEALERS' STOCKS OF AUTOMOBILE TIRES

	October 1, 1927			October 1, 1926		
	Number	No. of Dealers Reporting	Average Per Dealer	Number	No. of Dealers Reporting	Average Per Dealer
Total casings	1,933,867	33,548	57.6	1,866,770	37,439	49.9
Balloon casings	726,627	23,699	30.7	483,896	24,454	19.8
Inner tubes	3,399,726	32,984	103.1	3,465,310	36,947	93.8
Solid and cushion tires	43,605	1,671	26.1	47,560	1,992	23.9

DEALERS' STOCKS OF AUTOMOBILE TIRES BY STATES, OCTOBER 1, 1927

	Total Tires			Balloon Tires			Inner Tubes		
	No. of Dealers Reporting	No. of Tires on Hand	Average No. Per Dealer	No. of Dealers Reporting	No. of Tires on Hand	Average No. Per Dealer	No. of Dealers Reporting	No. of Tubes on Hand	Average No. Per Dealer
Alabama	355	20,656	58.2	242	7,395	30.6	346	35,325	102.1
Arizona	171	9,261	54.2	128	4,087	31.9	169	16,345	96.7
Arkansas	417	26,415	63.3	258	9,328	36.2	412	52,890	128.4
California	1,882	129,458	68.8	1,355	46,893	34.6	1,850	214,404	115.9
Colorado	441	22,015	49.9	322	7,779	24.2	441	36,636	83.1
Connecticut	354	23,989	67.8	240	11,756	49.0	345	39,138	113.4
Delaware	54	5,266	97.5	31	1,810	58.4	55	10,024	182.3
District Columbia	42	3,096	73.7	40	1,493	37.3	39	5,273	135.2
Florida	418	49,214	117.7	325	22,494	69.2	411	70,273	171.0
Georgia	366	19,920	54.4	239	7,462	31.2	363	40,936	112.8
Idaho	201	8,290	41.2	153	3,559	23.3	195	15,310	78.5
Illinois	1,752	96,606	55.1	1,262	35,096	27.8	1,715	174,909	102.0
Indiana	1,170	57,164	48.9	802	21,785	27.2	1,150	98,913	86.0
Iowa	1,264	66,599	52.7	966	21,639	22.4	1,242	124,775	100.5
Kansas	962	55,694	57.9	728	21,233	29.2	958	94,598	98.7
Kentucky	434	26,562	61.2	294	8,575	29.2	424	74,827	176.5
Louisiana	308	19,912	64.6	202	6,729	33.3	305	39,998	131.1
Maine	423	16,263	38.4	287	6,439	22.4	425	30,599	72.0
Maryland	405	26,598	65.7	343	13,052	38.0	401	43,749	109.1
Massachusetts	880	63,844	72.6	673	26,976	40.1	875	100,703	115.1
Michigan	1,425	76,867	53.9	1,040	29,830	28.7	1,375	138,008	100.4
Minnesota	1,096	64,466	58.8	770	21,777	28.3	1,079	107,466	99.6
Mississippi	339	19,529	57.6	223	6,226	27.9	333	39,173	117.6
Missouri	1,204	62,308	51.8	786	22,163	28.2	1,195	124,476	104.2
Montana	287	15,348	53.5	233	7,053	30.3	283	24,853	87.8
Nebraska	632	36,813	58.2	479	12,443	26.0	612	62,561	102.2
Nevada	58	3,144	54.2	45	1,471	32.7	57	4,768	83.6
New Hampshire	184	6,220	33.8	135	4,261	31.6	186	11,124	59.8
New Jersey	657	38,949	59.3	503	16,669	33.1	645	71,047	110.2
New Mexico	192	8,559	44.6	134	3,413	25.5	188	13,984	74.4
New York	1,992	131,805	66.2	1,364	51,472	37.7	1,946	222,395	114.3
North Carolina	532	34,573	65.0	340	10,814	31.8	521	57,390	110.2
North Dakota	475	19,855	41.8	318	5,619	17.7	465	44,468	95.6
Ohio	1,958	122,895	62.8	1,380	45,398	32.9	1,912	208,682	109.1
Oklahoma	608	44,482	73.2	455	19,352	42.5	612	87,558	143.1
Oregon	439	31,856	72.6	338	10,477	31.0	420	40,516	96.5
Pennsylvania	2,778	137,435	49.5	1,956	55,199	28.2	2,724	246,243	90.4
Rhode Island	118	6,451	54.7	77	1,633	21.2	116	12,910	111.3
South Carolina	252	12,462	49.5	137	3,388	24.7	251	24,507	97.6
South Dakota	382	16,675	43.7	284	5,250	18.5	378	29,206	77.3
Tennessee	364	25,694	70.6	230	9,613	41.8	362	50,857	140.5
Texas	1,413	90,824	64.3	971	32,906	33.9	1,413	167,759	118.7
Utah	164	8,256	50.3	125	3,600	28.8	163	13,064	80.1
Vermont	220	8,328	37.9	146	3,007	20.6	218	12,434	57.0
Virginia	791	29,653	37.5	431	9,391	21.8	773	49,439	64.0
Washington	624	26,839	43.0	445	9,951	22.4	610	41,708	68.4
West Virginia	468	20,347	43.5	301	7,211	24.0	460	33,224	72.2
Wisconsin	1,085	57,866	53.3	816	20,246	24.8	1,076	94,570	87.9
Wyoming	140	5,570	39.8	105	2,360	22.5	135	10,690	79.2
Unallocated	372	22,976	61.8	242	8,854	36.6	355	35,021	98.7
Total	33,548	1,933,867	57.6	23,699	726,627	30.7	32,984	3,399,726	103.1

[1] Special Circular No. 1683—Rubber Division, Department of Commerce, Bureau of Foreign and Domestic Commerce, Washington, D.C.

EDITORIALS

X-Rays for Rubber Plants

THE public generally seems impressed not so much with the remarkable advances in rubber technique as with the present and future sources of the crude material. Quite anxiously it inquires as to the prospects of rubber from Liberia, the Philippines, Brazil, the Southwest, or other American-favored regions; and of late it has been much fascinated with the efforts of a noted inventor to bring about an ample supply of rubber in the South that may be harvested yearly like corn or wheat.

The casual observer little realizes how hard it has been to hurry natural processes, as witness the many years and the great cost required to develop the present high-bred guayule and to make it available as a mature crop even quadrennially. Possibly experimenters in other directions may attain their ends through quicker and more striking methods. Rubber has afforded many big surprises. An electrical wizard may even use the x-ray to give him a genetic short cut from the meager to the generous producer. With it a Texan biologist has already speeded up mutations or plant changes 150 times as fast as they can be produced ordinarily. If botanical evolution can be effected at any such galloping pace, the public can hardly be blamed for expecting almost anything, even in rubber culture.

Is Rubber Dominance Passing?

NORTH AMERICANS are heeding the advice to become nationally independent, and the movement even presages the passing to them of crude rubber dominance long held by their British cousins. The best friends of the latter had repeatedly advised them that the Stevenson Restriction Scheme bore the seeds of its own undoing, and that it would surely invite reprisals. That abstract resentment can take a concrete form has been well attested in the Firestone-Liberia planting project; and now comes the official announcement by the Ford Motor Co., that a rubber planting concession of from 3,000,000 to 4,000,000 acres has been obtained in the Amazon Valley and that development will begin at once.

Even the most reasonable pleas for modification have been disregarded by the irreconcilables who have dictated the selling policy, and who, in their seemingly well intrenched position, have comforted themselves with the belief that even if Americans did enter the field on a large scale it would take a half dozen years before they could possibly realize any real benefit from a colossal investment. But the big tire and motor industrialists have evidently taken all that into account.

Hence with the 1,000,000 acres to be planted in Liberia, the 3,000,000 or more in Brazil, and the 200,000 now being cultivated by Americans in the Far East, and with the prospective developments in the Philippines, not to mention the promising prospects for harvesting guayule in the Southwest, the chances are that within a relatively short time the total rubber-yielding area under direct American control will compare very favorably with the total of 4,500,000 planted acres now under foreign control in the Far East.

A Question of Fair Mileage

ARE tires lasting too long? Should users expect more casing longevity? Has the mileage crest been reached? These questions are being earnestly debated in and out of the trade. Some large repairers claim to notice a perceptible let-down in quality in some high-grade casings during the past year or so, and they attribute the lessened life to the increasing use of reclaimed rubber. Many manufacturers do not deny using somewhat more reclaim than formerly, but they contend that its quality is much better than ever. In refuting the claim that the life of tires has been accordingly shortened they insist that the use of suitable anti-oxidants in tougher and more resilient rubber mixtures fully offsets any shortcomings of reclaim with regard to aging. Tire manufacturers strive like most others to effect reasonable economies, but their products in service and money's worth are not outranked in any industry. Certainly considering the moderate price at which tires are now sold, and their trebled mileage at less than half their former cost, it would seem that consumers have but little cause to complain.

Pessimism Regarding Bud Grafting

A PRESS story about the greatly increased latex yields promised through bud grafting on rubber plantations says that it not only makes the search for synthetic rubber useless, means the scrapping of millions of standard Hevea trees, but that it also sounds the death knell of all reclaimed rubber. An improvement will undoubtedly come, but not an early revolution in production. Synthetic is neither expected nor needed yet; the vast plantations will surely be bettered gradually with choicer stock; and the reclaimers will continue making a good auxiliary for crude rubber. But if, as some assert, a good quality of reclaim can be made as low as six cents a pound, bud grafted crude will have to be a veritable drug on the market before it will perceptibly lessen the demand for regenerated rubber.

American Rubber Technologists

¶Technical superintendents, process and development engineers in rubber manufacturing and reclaiming plants, research, testing and service laboratories are invited to send their biographical data to us for publication

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What the Rubber Chemists Are Doing

Influence of the Sulphur-Rubber Ratio on the Physical Properties of Hard Rubber[1]

DAVID E. PEARSALL

THIS study was undertaken to find the kind of rubber best suited to various types of apparatus, and to introduce tests suitable for use in specifications for hard rubber. The sulphur-rubber ratios of the compounds have been varied while all other factors have been held as constant as possible throughout the series.

The sulphur-rubber ratio which is the ratio of the sulphur to the amount of uncombined rubber hydrocarbon contained in the crude and reclaimed rubbers in the compound, expressed in per cent, is perhaps the most important of the many factors involved in the production of vulcanized rubber. It is known that below a certain sulphur-rubber ratio, placed by some at 23.5[2], vulcanized rubber assumes the characteristics which are attributed to soft rubber. Above this value we have what is commonly termed hard rubber.

In present day methods the sulphur-rubber ratio of soft rubber is seldom higher than 5. The interval between 5 and 30 is rarely used, and such compounds constitute a class of rubber frequently termed semi-hard or flexible hard rubber. While the properties of this class have not been thoroughly investigated, the majority of the compounds are known to be unstable and are of little value for commercial use at the present time. On this account, it is preferable to consider rubber as divided into the two classes, soft rubber and hard rubber.

The view that the rubber molecule is apparently saturated with two sulphur atoms has been held by many investigators, chief among them C. O. Weber.[3] In this compound, having the formula $C_{10}H_{16}S_2$, the sulphur-rubber ratio is equal to 47. It has been common practice to use sulphur-rubber ratios of greater values than 47 in the manufacture of hard rubber. The writer is of the opinion that this is unnecessary and that a closer control of the physical properties of the rubber can be maintained by using the lower values. The limiting sulphur-rubber ratios necessary for hard rubber compounds thus appear to be from 23.5 to 47. Accordingly, the physical properties of the hard rubber compounds chosen were studied, varying the sulphur-rubber ratio from 25 to 45 by intervals of 5, approximately.

Consideration of Tests

Dieterich and Gray[4] regard the impact strength test as the one most indicative of the character of the material. In this work the impact strength, transverse strength, tensile strength, at room temperature, the deformation under heat, and softening point of the rubber have been studied.

The results here given were obtained at two different times, a period of approximately one year intervening. Unfortunately there was an insufficient amount of material remaining from the first series of tests for a second series, so that the aging properties of the rubber could not be studied. In the first series of tests the tensile data were obtained using a horizontal tensile testing machine of the pendulum type equipped with an attachment for plotting the stress-strain diagram. In the second series the tensile data were obtained by means of a vertical floating-beam type machine. Similarly, the transverse data were secured by means of the two machines. The horizontal type of machine was equipped with special jaws for transverse testing.

The impact data in the first series of tests were obtained from an impact machine which depends upon the principle of a hammer falling from increasing heights for breaking the sample. In the latter series the impact tests were made on a low capacity pendulum type impact testing machine designed primarily for the examination of insulating materials by W. W. Werring of the Bell Telephone Laboratories.[5] On this machine both the Charpy and Izod methods of testing were carried out. The deformation under heat tests was made in an electrically heated triple-walled oven designed after one shown in the Standards of the American Society for Testing Materials for 1924.

The tests outlined below are modeled after those of the American Society for Testing Materials which are listed under Standard Methods of Testing Molded Insulating Materials.[6] All samples were cut from vulcanized sheet and machined to given dimensions within limits of ± 0.002 inches. The samples were immersed in water at normal room temperature two hours before testing. All results are averages of at least five tests except for the softening point tests, which are the averages of two samples.

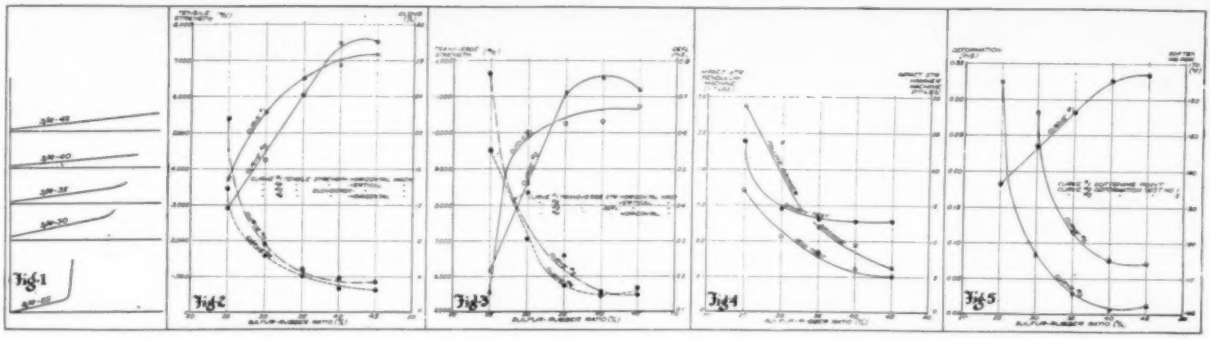
In measuring the elongation, marks were made at a distance of three inches from each other in the center portion of the sample, and were measured by dividers opened as the elongation increased. The tensile strength was obtained by dividing the load by the minimum cross-sectional area of the sample. The elongation was expressed in per cent of the three inch length. All values were taken at break.

The samples were machined to ⅛ by ½ by 6 inches and tested on 4-inch centers. The supports and loading member had rounded contact edges of 1/16-inch radii. The deflection was measured by a standard micrometer of the spring actuated dial type having a rounded spindle face so that only one point could be in contact with the specimen. The transverse strength was figured from the formula for rupture of a simple beam. The deflection was recorded in inches. All values were taken at break.

The samples for the falling hammer machine were ½ by ½ by 3 inches and were tested on 1½-inch centers. The first sample was tested starting at a minimum height and increasing this height by ¼-inch intervals to the breaking point. On the samples after the first, the minimum height was 3 inches below the height of break of the first sample. This was done to eliminate the effect of fatigue due to the repeated blows. For the Charpy test the samples were ½ by ½ by 6 inches with a notch 0.10 inch at the center of the sample and on the side opposite that to which the blow was delivered. The samples were tested on 4-inch centers. The Izod samples were ½ by ½ by 3 inches with a notch 0.10 inch placed 1¼ inches from the top of the sample and on the side to which the blow was delivered. The velocity of impact was 11.4 feet per second.

The deformation under heat tests was made on samples ¼ by ½ by 6 inches and ½ by ½ by 6 inches tested on 4-inch centers. The softening points were determined by the method of Dieterich and Gray but the tests were made on ¼ by ½ by 6 inch samples supported on 4-inch centers. The supports and loading member had rounded contact edges of 1/16-inch radii. The conditions of these tests in comparison to similar tests made by others are shown in Table 1. The deformation value as stated is the sum of the initial deflection due to the weight and the deflection due to

[1] Contribution from the manufacturing and development branch, Western Electric Co., Inc., Chicago, Illinois. Read before the Rubber Division of the American Chemical Society at Detroit, Michigan, September 6-10, 1927.
[2] *Indus. Eng. Chem.* 18, 73 (1926).
[3] C. O. Weber: *The Chemistry of India Rubber.* Page 91.
[4] *Indus. Eng. Chem.* 18, 428 (1926).
[5] Proceedings Am. Soc. Test. Mat., Part II. 634-680 (1926).
[6] *Am. Soc. Test. Mat.* Standard Tests on Molded Insulation D 48-24, and as subsequently revised.



heating. This value is not the same as the permanent set and is usually somewhat greater due to the recovery of the rubber when the weight is removed.

TABLE 1

CONDITIONS USED FOR HEAT TESTS

Method	Maximum Fiber Stress Lbs./Sq. In.	Weight Lbs.	Heating Rate Min.
A. S. T. M.	264	5.5	1°C.
Dieterich & Gray	2,500	26	2°F.
Chosen for Test No. 1	1,056	5.5	2°F.
Chosen for Test No. 2	264	5.5	2°F.

Constant temperature tests were made at 115 degrees ± 2 degrees F.

TABLE 2.

COMPOSITION OF COMPOUNDS BY WEIGHT IN POUNDS

Materials	Compound Numbers 245	246	247	248	249
Smoked sheet	15.00	15.00	15.00	15.00	15.00
Reclaimed rubber	30.00	30.00	30.00	30.00	30.00
Sulphur	9.40	11.40	13.20	15.20	17.00
Hard rubber dust	32.75	32.75	32.75	32.75	32.75
Carbon black	2.00	2.00	2.00	2.00	2.00
Light calcined magnesia	0.25	0.25	0.25	0.25	0.25
Pine tar	4.00	4.00	4.00	4.00	4.00
S/R	25.00	30.00	35.00	40.00	45.00

The rubber hydrocarbon content of smoked sheet is taken as 92.
The rubber hydrocarbon content of reclaimed rubber is taken as 80.
The hard rubber dust is not taken into account in evaluating the sulphur-rubber ratio as it is supposed to be practically saturated from previous vulcanization.

TABLE 3

FREE SULPHUR ANALYSIS AND COEFFICIENT OF VULCANIZATION

Compound Number	Sulphur in Compound lbs.	Free Sulphur lbs.	Comb. Sulphur lbs.	Coef. of Vulc.	Actual S/R
245	9.40	0.09	9.31	24.63	24.87
246	11.40	0.11	11.29	29.87	30.15
247	13.20	0.13	13.07	34.50	34.92
248	15.20	0.27	14.93	39.45	40.21
249	17.00	0.43	16.57	44.60	44.97

The coefficient of vulcanization (in per cent) is taken as the ratio of the combined sulphur to the rubber. The combined sulphur was determined by subtracting the free sulphur as found by analysis from the amount of sulphur added to the compounds.

Experimental

The formulas of the compounds tested are given in Table 2. In these, the composition by weight was held constant with the exception of the sulphur which was varied to give the sulphur-rubber ratios shown. The compounds were prepared on an experimental mill and calender, plated with tin-foil and vulcanized in open steam for 11 hours at 50 pounds per square inch steam pressure. Partial chemical analyses of the vulcanized rubber and the coefficients of vulcanization are included in Table 3. The samples from which the test strips were made were allowed to age at least 72 hours before testing. In the case of the softening point and deformation under heat tests, the samples aged about two weeks before testing.

The stress-strain curves drawn by the attachment of the horizontal machine are given in Figure 1. These curves show especially well the decreasing elongation and increasing strength which result when the value of the sulphur-rubber ratio is gradually increased. Figure 2 shows the curves obtained by plotting the tensile strength and elongation as ordinates against the sulphur-rubber ratios as abscissas. Figure 3 shows similar curves for transverse strength and deflection; Figure 4 gives curves for the impact strength, while in Figure 5, the deformations under heat and softening points are plotted against the sulphur-rubber ratio. The physical strengths are given in Table 4, and those of the heat tests in Table 5.

Conclusions

1. Investigation of the sulphur-rubber ratio indicates that values below 30 produce rubber whose physical strength is too low and whose flexibility and flow under heat and load are too great for general use. At a sulphur-rubber ratio of 45 the rubber appears to have reached a point where the physical strength is near its maximum value and the deflection is at a minimum. Thus, the compounds having sulphur-rubber ratios between 30 and 45 appear to possess all the properties that are desirable in hard rubber.

2. It is possible to form specifications for hard rubber in which physical tests are used as requirements. Such specifications should be of more value than those which depend upon chemical tests, as they determine the strength of the rubber and the conditions under which it can be best used.

3. Comparable results are obtained in transverse and tensile tests using both the horizontal-pendulum and vertical-floating-beam types of machine. In both cases, however, a more accurate means

TABLE 4

INFLUENCE OF SULPHUR-RUBBER RATIO ON PHYSICAL STRENGTHS OF HARD RUBBER

		Tensile Test				Transverse Test				Impact Test		
		Hor. Machine		Vert. Machine		Hor. Machine		Vert. Machine			Pendulum Machine	
Sample	Sulphur Rubber Ratio	Str. (Lbs./Sq.")	Elong. (%)	Str. (Lbs./Sq.")	Elong. (%)	Str. (Lbs./Sq.")	Defl. (%)	Str. (Lbs./Sq.")	Defl. (%)	Falling Hammer (Ft. Lbs.)	Izod (Ft. Lbs.)	Charpy (Ft. Lbs.)
245	25	3,686	14.05	2,922	21.30	5,516	0.550	6,095	0.765	28.8	0.34	.480
246	30	5,555	6.25	4,205	7.68	9,902	0.435	8,540	0.316	23.4	0.21	.293
247	35	6,500	4.16	6,025	4.30	10,300	0.175	11,127	0.257	11.9	0.17	.264
248	40	6,885	2.60	7,526	3.85	10,350	0.145	11,535	0.156	9.0	0.12	.255
249	45	7,220	2.50	7,511	3.37	10,746	0.156	11,100	0.150	6.1	0.10	.255

TABLE 5

DEFORMATION UNDER HEAT AND SOFTENING POINT TESTS

Sample No.	S/R	Deformation Under Heat Test No. 1 ¼"x¼" Samples Inches	Deformation Under Heat Test No. 2 ½"x½" Samples Inches	Softening Point °F.
245	25	....[1]	0.327	136.50
246	30	0.282	0.085	147.00
247	35	0.120	0.029	156.50
248	40	0.077	0.009	165.25
249	45	0.072	0.012	167.00

[1] Samples slipped through supports after heating for one-half hour.

of measuring the tensile elongation is desirable. In the horizontal machine both crossheads move so that the speed as stated is somewhat inaccurate; however, the stress-strain diagrams plotted by this machine are advantageous. The tensile strength test appears to give results which can be held within reasonable limits and closely checked, and should be of value in specifications on hard rubber. It is believed that when a more accurate means of measuring the tensile elongation is available this result will be of greater value. The transverse deflection is considered more reliable than the transverse strength.

4. In the impact test, better agreement in the results was obtained from the pendulum type machine than from the falling hammer machine. Both the Charpy and Izod methods appear to be suitable. Although there is no agreement between them as to actual values, the curves in Figure 6 show similar trends. The falling hammer test for impact strength is believed to be unsuitable as is shown by the lack of uniformity in the results.

5. A deformation under heat test, such as Test No. 1 (Table 1) enables one to differentiate between rubbers of varying sulphur-rubber ratios in a comparatively short time. This test appears to be useful as a requirement in specifications on hard rubber. The softening point tests are not considered as important as the heat-deformation tests because the temperature to which the rubber will be subjected is usually known and it is desired to find the actual amount of deformation that takes place.

The author wishes to express his indebtedness to Dr. E. A. Daniels and H. E. Malone, under whose direction the major portion of this work was carried out.

Chemical Patents

United States

1,645,084. ACCELERATOR. The reaction product of sulphur and para-phenylene diamine resulting from interaction of substantially 108 parts by weight of para-phenylene diamine and 32 parts by weight of sulphur.—C. W. Bedford, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,646,605. BATTING PROCESS. Felting smooth fibers comprises batting, coating, and impregnating the fibers with latex, drying, and during drying producing a slowly reduced atmospheric pressure.—W. B. Westcott, Quincy, assignor to The Rubber Latex Research Corp., Boston, both in Mass.

1,647,184. VULCANIZING PROCESS. This comprises a compound of soluble and insoluble soaps in the rubber mix and vulcanizing it under heat and pressure. S. G. Luther, Akron, O.

1,647,754. ACCELERATOR. The reaction product of an aldehyde-ammonia and thiourea used with a vulcanizing agent.—N. A. Shepard and S. Kroll, assignors to The Firestone Tire & Rubber Co., all of Akron, O.

1,647,805. TREATING LATEX. An unhydrolized creaming agent is added to latex causing separation of a thickened layer of creamed latex which is then withdrawn from the serum and subjected to a hydrolyzing action.—J. McGavick, Jackson Heights, assignor to The Naugatuck Chemical Co., Naugatuck, Conn.

Dominion of Canada

274,574. BRATTICE SHEETING. A fabric fireproofed by impregnation with an ammonium phosphate and coated on both sides with a high grade rubber, coal-tar and natural bitumen.—The Canadian Fabrikoid, Ltd., Montreal, assignee of E. I. du Pont de Nemours & Co., Wilmington, Del., U. S. A.

274,580. COVERING MATERIAL. A flexible waterproof material comprising a burlap base to which a layer of rubber cement is applied binding to the base a facing sheet. A surface coating of pyroxylin is applied to the facing sheet.—The Duratex Corp., Newark, assignee of J. A Wilson, Elizabeth, both in N. J., U. S. A.

274,582. COVERING MATERIAL. A flexible, clothlike, material comprising a burlap base, a relatively thin surface coating of pyroxylin, and an intermediate layer of flexible waterproof material applied directly to the base. This is capable of bending through a considerable arc without cracking.—The Duratex Corp., Newark, assignor of J. A. Wilson, Elizabeth, both in N. J., U. S. A.

275,102. ACCELERATOR. A mercapto-arylthiazole whose aryl structure contains a nitro group is used for vulcanizing rubber.—The Goodyear Tire & Rubber Co., assignee of L. B. Sebrell, both of Akron, O., U. S. A.

275,125. ACCELERATOR. An amine, carbalkoxy thione polysulphide containing five or more sulphur atoms per molecule is used as a vulcanization accelerator of rubber in connection with a vulcanizing agent and heat.—The Roessler & Hasslacher Chemical Co., New York, N. Y., U. S. A., assignee of G. S. Whitby, Montreal.

275,126. ACCELERATOR. A diaryldialkyl substituted thiuram polysulphide containing more than four atoms of sulphur per molecule is used with a vulcanizing agent for curing rubber. The Roessler & Hasslacher Chemical Co., New York, N. Y., U. S. A., assignee of G. S. Whitby, Montreal.

United Kingdom

275,672. PIGMENT. A method for preparing oxides of titanium and other oxides for use as a paint or filler for rubber compositions.—J. Blumenfeld, 16 Addison Crescent, London.

275,685. FLOOR, ROOF AND WALL COVERINGS. These comprise a sheet of rubber and a layer of felt impregnated with bitumen mutually attached and vulcanized.—M. H. Tate, 53 Perham Road, West Kensington, London.

276,435. ACCELERATOR. The product prepared by the interaction of an aliphatic or aromatic aldehyde, an amine, and carbon disulphide, or of an anhydro-aldehyde-amine with carbon disulphide or of an aldehyde with the substituted ammonium salt of a mono-substituted dithiocarbonic acid.—E. C. R. Marks, 57 Lincoln's Inn Fields, London, E. I. du Pont de Nemours & Co., Wilmington, Del., U. S. A.

276,626. RECLAIMING BEADS. Tire beads, etc., are reclaimed by impregnating them with oil obtained by distilling waste rubber, then impregnating them with hydrochloric acid to polymerize the oil and swell the mass, then washing with water, slitting the beads, removing the hard core and regenerating the rubber contained in the separated canvas.—Franco-Neerlandais Syndicat, 8 Rue Halévy, Paris, France.

276,705. COATING METAL. Metal surfaces of gutters, iron work, coach bodies, etc., are covered and protected from dampness by vulcanizing upon them under pressure a rubber composition containing about 75 per cent of tire scrap.—Dunlop Rubber Co., Ltd. 1, Albany St., Regent's Park, London, A. Lakeman and F. C. Macabe, Fort Dunlop, Birmingham.

276,968. PREVENTING AGING. The aging of rubber is improved by the incorporation with it of secondary aromatic amines. Phenylalpha-naphthylamine and diphenyl-amine are particularly useful. The amine may be applied in solution to the surface of rubber articles before or after vulcanizing, or the rubber may be exposed to the vapor of these substances.—E. I. du Pont de Nemours & Co., Wilmington, Del., U. S. A.

277,034. COLORING RUBBER. Insoluble metal salts of triarylmethane dyestuffs, etc., are mixed with rubber prior to vulcanization to produce dyeings, particularly violet, green, or blue, fast to vulcanization.—I. G. Farbenindustrie Art. Ges., Frankfurt-am-Main, Germany.

New Zealand

57,327. HOMOGENEOUS RUBBER DEPOSITS. Consists in eliminating from the rubber latex substances favoring the development of gases upon the electrode or diminishing the content thereof to a non-detrimental amount.—J. T. Hunter, 157 Featherston St., Wellington, nominee of The Anode Rubber Co., the assignees of Francis Gabor and Paul Klein.

57,414. TIRE SEAL COMPOSITION. This comprises pea powder crushed to the fineness of flour and water mixed to the consistency of cream.—A. Whitworth, 20 Sandyford St., Christchurch.

Germany

450,696 ACCELERATION OF VULCANIZATION. I. G. Farbenindustrie A. G., Frankfurt a. M.

451,692 PRODUCTS SIMILAR TO VULCANIZED RUBBER. Concortium fur elektrochemische Industrie G m. b. H., Zielstattstrasse 20, Munich.

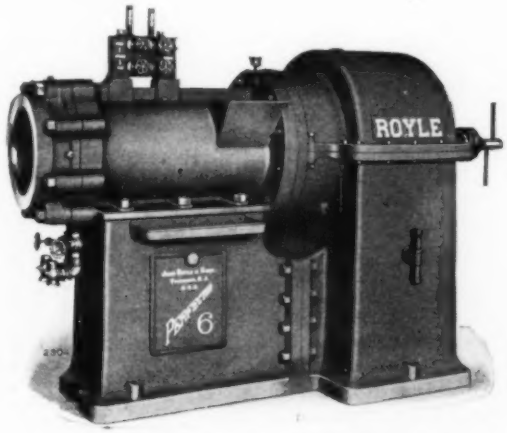
A CORRECTION

In the article "Some Accelerator Characteristics as Revealed by Coefficients of Vulcanization," by A. F. Hardman and Frank L. White, published in October's issue of this journal, the captions appearing under Figure 4 and Figure 5 were inadvertently reversed.

New Machines and Appliances

Solid Tire Tubing Machine

A NEW giant 10-inch tuber for extruding solid tires and other large work such as straining compounded stocks, reclaim, etc., is here represented. The machine is of very heavy construction and in this respect it differs radically from the lighter type tubing machine. It is built to operate with a 200 h.p. individual motor hence the compound helical gears are massive in size and are figured with a liberal factor of safety. These gears have very large bearings and are self lubricated by a bath of oil.

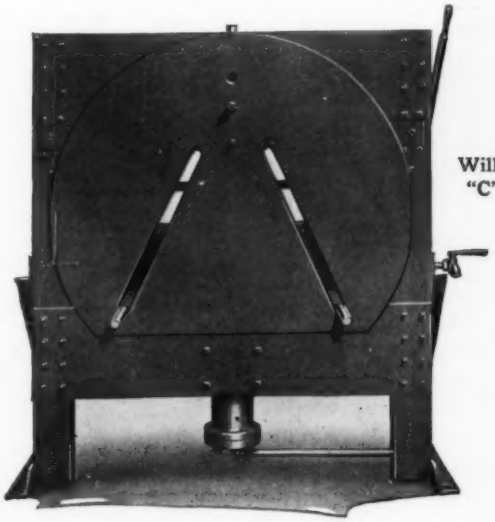


Royle Ten-Inch Perfected Tuber

The first of this 10-inch model is now in operation at one of the large Akron rubber plants and its installation is to be followed by a second.—John Royle & Sons., Paterson, New Jersey.

Airbag Inserter

The difficulties of airbag insertion and damage that results from doing the work by hand are all eliminated with saving of labor cost by the mechanism here illustrated. The frame of the machine is built of structural steel. The air cylinder is of cast iron and steel forging while the moving parts are of cast iron.



Williams Type "C" Inserter

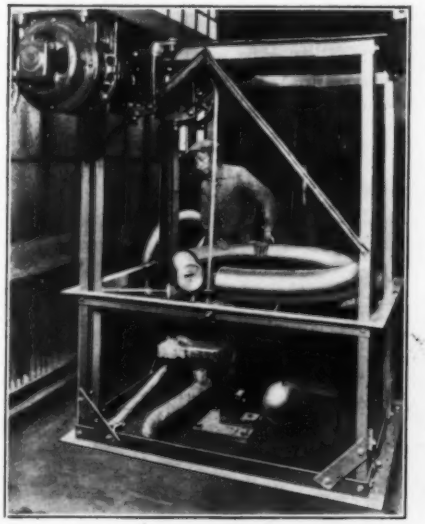
In operation, the airbag is placed against the face plate resting upon the two lower compressing pins in expanded position. The 3-way air valve is opened to operate the piston. The resulting action forms the airbag into clover leaf shape. The uncured tire is placed over the two top clover leaf shapes of the airbag. The air pressure in the cylinder is released which forces the airbag into the tire. A pull upon the face plate lever next forces the assembled tire from the machine.

The advantages of this bag inserter are briefly; the extension of the life of the tire, reduction of manual labor since one man can bag from 50 to 85 tires per hour depending upon tire and airbag construction.

The machine functions with 75 pounds of air pressure and accommodates either high pressure or balloon tires.—The Williams Foundry & Machine Co., Akron, Ohio.

Improved Machine for Polishing Mandrels

The necessity of polishing inner tube mandrels is an ever-present problem in a tire and tube factory which is made more difficult in case modern circular mandrels are used. The difficulty, however, is effectually obviated by using the improved machine here pictured.



Clyde E. Lowe Electric Machine for Polishing Circular Tire Mandrels

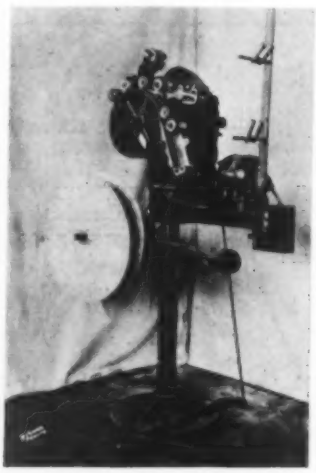
This machine comprises a framework of steel angles, providing a rest for supporting the mandrel horizontally, encircled and cleaned by an endless belt with a very finely abrasive or polishing surface.

The driving mechanism for the polishing belt consists of a motor mounted above the work on the top of the frame. The motor's operation is controlled by a foot lever. A suspended weight holds the mandrel upon roller supports as it passes through the revolving loop of the cleaning belt.

The machine has two forward and reverse speeds which permit polishing both inner and outer surfaces without the necessity of turning over the mandrel. The more even and constant speed of this improved machine gives a better polish, the perfection of which is imparted to the surface of the cured inner tube.

Strip Plying Machine

Building by hand, plied up strip stock for tire sidewalls, chafers, flaps, and for various other purposes is expensive, slow and the product more or less inaccurately made. The cost of such work can be greatly reduced, production speeded and accuracy of work attained by specially designed machines. These are built for handling different widths and plies of stock ranging from 2 to 5 plies and 3 to 10 inches in width.



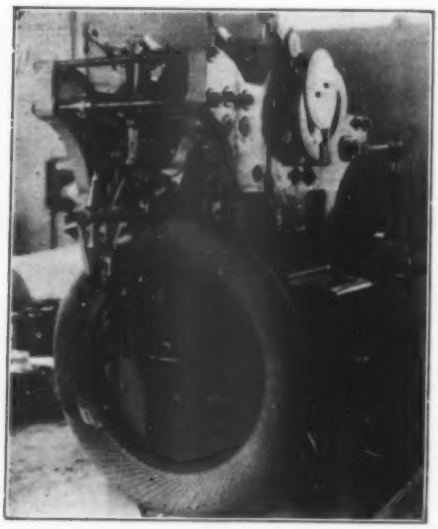
Utility Strip Plyer

The machine illustrated is for combining 3-inch strip, 3-ply. It is mounted on a pedestral carrying two brackets, one for supporting the motor and frame with guides for the strips to be plied, and the other holding a stock reel for receiving the plied strip. A shell carrying a liner is placed on the spindle in front of the stock reel. The machine comprises three plying units placed tangential to the plying drum. The plying unit consists of a guiding angle of metal carrying on its outward end a pair of small grip rollers. The fabric threaded through these passes along under a steel guide roller immediately in front of a rubber covered compression roller.

The latter presses the ply against those coming from the other units as they pass over the face of the building up drum. The operating speed of the machine is about 150-180 feet per minute on continuous work.—Utility Manufacturing Company, Cudahy, Wisconsin.

Cord Tire Building Machine

An exceptionally unique tire building machine is represented in the accompanying illustration. This mechanism functions to build a cord cable tire by precise placement of rubber impregnated plied cords at a predetermined angle and laying the cords in a straight line from bead to bead. In regard to the construction of the tire built by this machine each cord is constricted at the beads and flattened in the middle. This effect is produced by displacement of the cords rather than by compression. There is thus produced a strip of cord narrow at each end where it is anchored to the bead, and widest at the middle or tread part of the tire. This arrangement permits laying the strip in perfect mathematical diagonal alinement by the automatic tire machine which admits no variation in the lay of the strips. The cord cables thus lie in straight lines instead of in irregular formation and, moreover, they are equally spaced at every point on the tire. Therefore there are no wavy cords to straighten and relax in service with ultimate deterioration of the tire.—Hydro-United Tire Corp., Pottstown, Pennsylvania.



Dickinson Cord Tire Machine

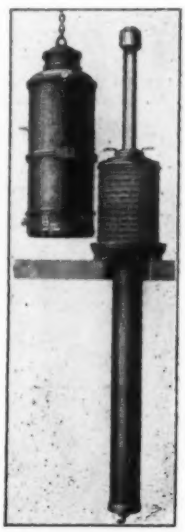
Bicycle Tire Press Vulcanizer

The novel press vulcanizer here pictured is designed to vulcanize in from six to nine minutes 25 bicycle tire covers at one operation.

Its construction and operation are unique. The base platen, mounted on the hydraulic piston, serves as the support for the stack of 25 circular molds. These are lifted as a group and drawn together from above by the action of a perforated differential piston which passes through the center of the stack and is hydraulically operated. A plate of cast steel and a two-piece collar serve to cap the stack of molds.

The steam cavity is formed by lowering over the molds a counterbalanced deep cover or bonnet suspended above the apparatus. The steam bonnet is operated on or off the working position by means of a motor-driven hoist and is locked in closed position by a bayonet joint.

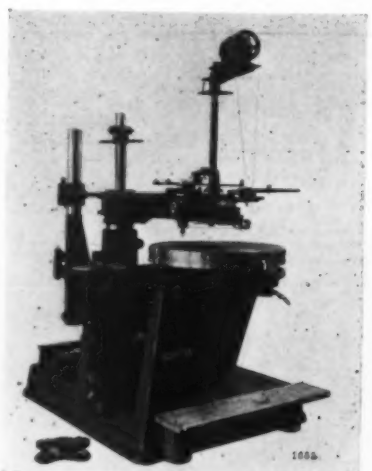
The weight of the apparatus is not excessive, therefore no special foundation is required and the press can stand on a concrete floor.—Leonh. Herbert, Frankfort-on-the-Main, Germany.



German Press

Tire Mold Lettering Machine

The machine illustrated is a heavy tool designed for engraving lettering in tire molds. It has a width of working space of 84 inches and its length is 6 feet. It will operate on a mold of 14-inch maximum thickness. Maximum outside diameter of the table will swing 72 inches. With table horizontal it will engrave on a 54-inch diameter circle to within 5 inches of the center of table. With table at 30 degrees it will engrave on 60-inch diameter circle to within 8 inches of the center of table.



Gorton Tire Engraving Machine

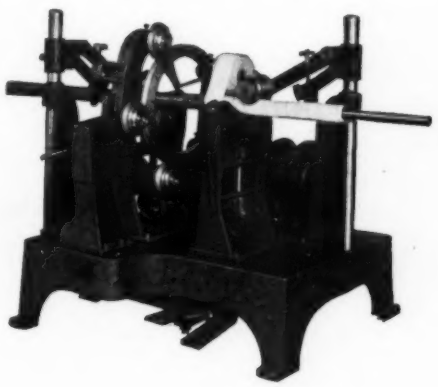
The pantograph is ball bearing and of very heavy construction. The same is true of the cutter head which can be freely moved without effort. The table is mounted on a steel spindle four inches in diameter running in two heavy ball bearings, the upper of which is radial thrust having a rated load capacity of 10,000 pounds. The copy holder is mounted on the sliding head and is adjustable to compensate pantograph reduction.

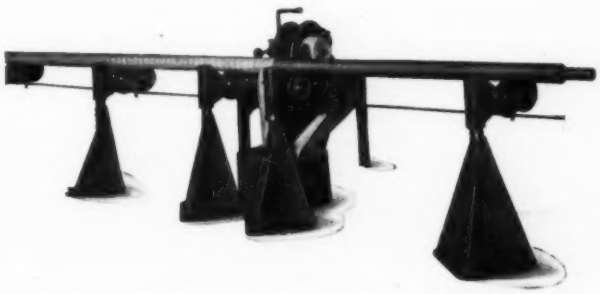
For uniform quantity production it is necessary to index each letter. This is accomplished quickly and accurately by an index plate revolving four times to one revolution of the table.—George Gorton Machine Co., Racine, Wisconsin.

Hose Wrapper and Unwrapper

These are companion machines that form a most efficient team in the hose room. On the left is Model 9, a machine for wrapping cotton tape on hose preparatory to vulcanizing. The tape is applied with an absolute uniform tension and evenness eliminating all wrinkles. Although this machine will apply the usual straight jacket simultaneously with the wrapping, if desired, it has been found that the straight jacket is no longer necessary in the making of hose with this machine. The patented compensating tension device enables the cotton tape to be used for several more wrappings. The machine handles ¼ inch to 4 inch hose and it will wrap a 50 foot length in approximately one minute.

Model 10 which is shown at right, unwraps, wets and spools the cotton tape after vulcanizing making it ready for use on the other unit. The rewinding of the tape is accomplished in such manner that the strain on the tape while wrapping is always on the same edge. The supporting brackets for the mandrel are connected together to swivel as a unit thereby regulating the linear speed of the mandrel while being unwrapped. The tape passes through the wetting tank and a series of pins to the spool core which fits the Model 9 machine. This combination does away with all skilled labor permitting the use of unskilled help.—Terkelsen Machine Co., 326 A street, Boston, Massachusetts.





Terkelsen Hose Wrapping and Unwrapping Machines

Process Patents

United States

1,644,829 WATER BOTTLE. H. A. Hands, assignor to Hood Rubber Co., both of Watertown, Mass.

1,645,248 CUSHION. M. S. Lower, assignor to The Sun Rubber Co., both of Barberton, O.

1,645,604 SPONGE RUBBER ARTICLE. M. S. Lower, assignor to The Sun Rubber Co., both of Barberton, O.

1,645,635 PAVING. W. B. Wescott, Quincy, assignor to The Rubber Latex Research Corp., Boston, both in Mass.

1,645,748 RUBBER LINED HOLLOW ARTICLE. J. R. Gammeter, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,645,758 CONDUCTOR. A. R. Kemp, Jamaica, assignor to Western Electric Co., Inc., New York, both in N. Y.

1,646,508 TIRE CASING. C. C. Wais, Cincinnati, assignor of one half to A. C. Wais, Wyoming, both in Ohio.

1,646,693 TIRE APPLIANCE. J. P. Hayes, Chicago, Ill.

1,647,055 GLOVE. T. G. RICHARDS, Barberton, O.

Dominion of Canada

274,917 CALENDERING METHOD. The Dunlop Rubber Co., Ltd., Regent's Park, County of London, assignee of A. E. Penfold, Birmingham, County of Warwick, both in England.

United Kingdom

276,392 ARTIFICIAL LEATHER. Respro Inc., and R. K. Abbott, 38 Chestnut Ave., Eden Park, both in Cranston, R. I., U. S. A.

276,431 VULCANIZATION METHOD. L. A. Laursen, Akron, O., U. S. A.

276,763 CREPE SOLES. St. Helen's Cable & Rubber Co., Ltd., Slough, and H. C. Harrison, Bath Road, Taplow, both in Buckinghamshire.

Germany

451,803 DOUBLE-TEXTURE CLOTH. Duramond Kunstleder-und Gummierungs-Werke, Karl Hafele & Co., Lustnau, Tubingen, Wurttbg.

Machinery Patents

Dominion of Canada

274,572 GRINDING APPARATUS. The Cameron Machine Co., New York, N. Y., assignee of R. M. Johnstone, Roselle Park, N. J., both in U. S. A.

274,855 REPAIR VULCANIZER. W. H. Hodgson, Swift Current, Saskatchewan.

275,075 COLLAPSIBLE CORE. The Bawden Machine Co., Ltd., Toronto, Ont., assignee of B. De Mattia, Clifton, N. J., U. S. A.

275,076 COLLAPSIBLE CORE. The Bawden Machine Co., Ltd., Toronto, Ont., assignee of The Kuhlke Machine Co., assignee of O. J. Kuhlke, both of Akron, O., U. S. A.

275,098 AIRBAG STRIPPER. The Goodyear Tire & Rubber Co., assignee of R. W. Snyder, both of Akron, O., U. S. A.

275,100 HOSE WASHING MACHINE. The Goodyear Tire & Rubber Co., assignee of J. I. Haase, both of Akron, O., U. S. A.

275,103 MACHINE FOR UNWRAPPING TUBES. The Goodyear Tire & Rubber Co., assignee of E. F. Maas, both of Akron, O., U. S. A.

United Kingdom

275,667† HOLLOW RUBBER ARTICLE MOLD. Goodyear Tire & Rubber Co., 1144 East Market St., assignee of R. S. Burdette, 345 Sumatra Ave., both of Akron, O., U. S. A.

275,746 HEEL MOLD APPARATUS. E. Hutchens, 671 Superior St., Milwaukee, Wis., U. S. A.

276,047 ROLLER. C. H. Gray, 106 Cannon St., London.

276,430 VULCANIZER. L. A. Laursen, Akron, O., U. S. A.

276,694† MACHINE FOR RECOVERING VOLATILE LIQUIDS. A. Boecler, 12 Rue Briere de Boismont, St. Mande, Seine-et-Oise, France.

276,880 MIXER. R. C. Lewis and Farrel Fdy. & Mch. Co., 25 Main St., Ansonia, Conn., U. S. A.

276,983† RUBBER CUTTING MACHINE. Goodyear's India Rubber Glove Mfg. Co., Maple St., assignees of F. R. Dean, 149 Haadley St., both of Naugatuck, Conn., U. S. A.

† Not yet accepted.

Machinery Patents

United States

1,644,678. TUBE VULCANIZER. A vertical form of vulcanizer which permits insertion of the tube in such manner as to eliminate all possibility of pinching and reduces the rind or overflow.—O. J. Kuhlke, assignor to The Kuhlke Machine Co., both of Akron, O.

1,645,704. ELECTRIC VULCANIZER. The heat is supplied by interlinking the annular tire mold section and forming core, by transformer iron, with a primary coil in such manner that these parts become closed, single turn secondaries of a transformer.—J. Ledwinka, assignor to E. G. Budd Mfg. Co., both of Philadelphia, Pa.

1,646,359. NIPPLE EDGE GUMMING MACHINE. A link belt carrier with spring clamps automatically picks pairs of nipple blanks out of a series of pockets brought successively to position by a wheel. The conveyer carries the blanks past two wiping rollers which apply cement to the edges of the blanks.—P. A. Raiche and T. B. Dowling, Providence, and T. J. Brides, Warwick, assignors to Davol Rubber Co., Providence, all in R. I.

1,646,447. CRUDE RUBBER CUTTER. This is a fluid pressure operated guillotine knife with a vertical clamp automatically cooperating with the knife during the slicing operation. The rubber mass is pushed forward for cutting by fluid pressure similarly to the movement of the knife.—R. W. Dinzl, Bywood ,assignor to Southwark Foundry & Machine Co., both in Philadelphia, Pa.

1,646,568. BATTERY BOX PRESS. This press forms a box from a block of uncured rubber by pushing the mold upward against a core detachably supported on the head above. After pressing the molding appurtenances are raised by overhead hydraulic power leaving the detached core in the pressed box ready for curing.—T. A. Willard, Cleveland Heights, Ohio.

1,646,980.—CALENDER SAFETY DEVICE. This device bridges the bight of the calender rolls and prevents the hand of the operator from coming in contact with more than one roll if for any reason he inserts his hand beneath the guard.—A. H. Peglow, Cudahy, Wis., assignor to the Fisk Rubber Co., Chicopee Falls, Mass.

1,647,235. CEMENTING MACHINE. This applies cement to the bottom edge of fabric sole upper as it is fed between a pair of knurled rollers. The cement flows from a tank to the cementing rollers and a sufficient amount is applied at one passage of the upper through the machine.—H. F. Lewis, Hamden, assignor to The L. Candee & Co., New Haven, both in Conn.

1,647,339. FOOTWEAR VULCANIZER. This provides means to uniformly mix the heating medium employed and to protect the rubber to be vulcanized from local heating or cooling action.—R. W. Brown, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

1,647,358. JAR RING LATHE. This is wholly automatic of great cutting capacity and having an automatic cutter mechanism reverse.—C. R. Hubbard, Newark, N. Y., assignor to The Mechanical Rubber Co., Cleveland, Ohio.

1,645,068. FIBER COMPOSITION MACHINE. W. G. O'Brien, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,645,081. TIRE BUILDING TOOL. D. L. Williams, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,645,101. TIRE REPAIR TOOL. J. M. Gibb and G. M. Jobe, Providence, R. I.

1,645,157. TUBING MACHINE. V. Royle, Paterson, N. J.

1,645,397. TIRE BUILDING MACHINE. J. E. Perrault, assignor to Hood Rubber Co., both of Watertown, Mass.

1,645,441. SOLE CUTTING MACHINE. P. J. McGowan, Hyde Park, assignor to Wellman Co., Medford, both in Mass.

1,646,021. INFLATED BALLOON PRINTING APPARATUS. H. Grosser, Buenos Aires, Argentina, assignor to The Firm United States Import House Emanuel Van Dam, Amsterdam, Holland.

1,646,166. TIRE REPAIR KNIFE. J. M. Newton, Sioux Falls, S. Dak.

1,646,511. TIRE CHANGER. I. A. Weaver and J. Sternaman, assignors to Weaver Mfg. Co., all of Springfield, Ill.

1,646,953. TUBE. W. J. Donovan, assignor to The Fisk Rubber Co., both of Chicopee Falls, Mass.

1,646,967. HOLDING DEVICE. T. P. Little, assignor to The Fisk Rubber Co., both of Chicopee Falls, Mass.

1,646,976. TIME CONTROLLED REGULATING APPARATUS. H. Y. Norwood, assignor to Taylor Instrument Cos., both of Rochester, N. Y.

1,647,040. VULCANIZER. R. D. Fritz, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,647,054. TIRE SPREADER. C. P. Price, San Antonio, Tex.

1,647,104. TIRE BUILDING MACHINE. H. A. Denmire, assignor to The General Tire & Rubber Co., both of Akron, O.

1,647,163. TIRE BUILDING MACHINE. G. F. Wikle, Milwaukee, Wis., assignor to The Fisk Rubber Co., Chicopee Falls, Mass.

1,647,164. BUILDING CORE BEAD RING. G. F. Wikle, Milwaukee, Wis., assignor to The Fisk Rubber Co., Chicopee Falls, Mass.

1,647,596. REPAIR VULCANIZER. H. K. Wheelock, Akron, O.

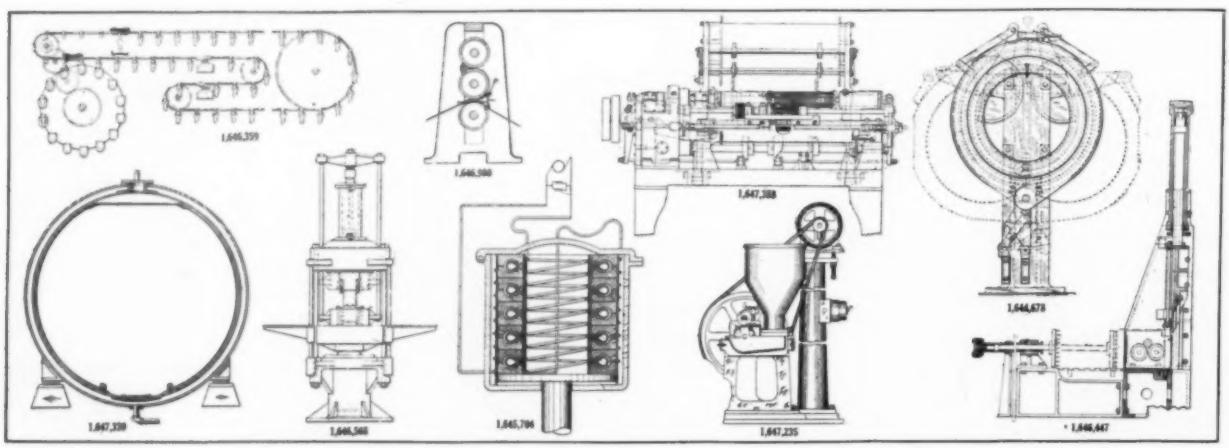
Germany

1,003,985 VULCANIZER DOOR. Fried. Krupp Grusonwerke A. G., Magdeburg-Buckau.

1,004,727 STICKING PLASTER DEVICE. Dr. Siegfried Salomon, Hermesweg 23, Frankfurt a. M.

Hose Cross Wrapping Machine

A well designed, simple and sturdy machine for cross wrapping is indispensable for consolidating the plies of rubber hose. Such a machine is now perfected and can be attached to the present hose wrapping machine of the three or four roll type without necessitating any changes in the lay-out. The machine eliminates hand labor most efficiently. It is arranged to apply the roll of cross wrapping fabric up and down the length of the hose so that as many layers of cross wrapping as desired can be applied and at any tension. The tension feature is a most important factor and does not vary when once adjusted, thus insuring uniformity of friction grip between the plies throughout the length of the hose. The machine is adapted for cross wrapping hose of all sizes including suction, dredging sleeves, etc.—Spadone Machine Co., 15 Park Row, New York, N. Y.



Editor's Book Table

"VIIe. Exposition Internationale du Caoutchouc et Autres Produits Tropicaux." Report of International Conference, Paris, 1927. Edited by Sir Wyndham Dunstan, K. C. M. G., F. R. S. and Professor Em. Perrot, Dr.-es-Sciences, Paris. Together with a review and summary of the discussions at the conferences, by Professor Em. Perrot. Published by H. Greville Montgomery Exhibition Offices, 43 Essex street, London W. C. 2. Paper covers, 6¼ x 9¼ inches, 334 pages. Map, chart, tables, illustrations.

The speeches and papers read at the Seventh International Exhibition of Rubber and Other Tropical Products, held from January 24 to February 4, 1927, have now been collected and published in one volume. The rubber section, which naturally is of first importance to those connected with the rubber industry, happens also to occupy the leading place in the book under review; the 20 papers, nine in French and eleven in English, relating to rubber, together occupy over one-third of the volume and took up five of the allotted eleven days of the conferences. The constitution of latex, its uses in different forms, chemical and manufacturing problems, the rubber market, improving yields, rubber in Brazil, rubber in Belgian Congo, were among the topics taken up by such authorities as Bongrand, Stevens, Hauser, Grantham, Vasconcellos, Alcan, Pickles, Porritt, Schidrowitz, Baron Fallon, Wavelet, Sir Stanley Bois, etc. The names, it may be remarked, are as indicative of the international character of the gatherings as of the diversity of the subjects treated. Not the least interesting part of the volume is that section which is devoted to the discussions of the various papers.

"Diseases and Pests of Hevea Brasiliensis in the Netherlands Indies." By Dr. A. Steinman. Edited by the Rubber Experimental Station West-Java. Cloth, 42 pages, 7½ by 10 inches. Illustrated.

This is an English edition of the book "Ziekten en Plagen van Hevea Brasiliensis" by Dr. Steinman, ex-botanist of the Rubberproefstation West-Java, and is based on data collected by the different rubber experimental stations in the Netherlands Indies. This edition contains all the colored plates and most of the figures from the original version, besides a summary of the Dutch text which serves as an explanation to the illustrations.

The contents are arranged on a different plan than in the original Dutch book, no details of the anatomical structure of the different fungi have been mentioned, the chapter on plagues has been reduced as much as possible and the diseases of seedlings were brought together in a separate chapter. As an appendix a review of the most used disinfectants and their method of application was added.

"Year Book of The National Association of Cotton Manufacturers, 1927." Published by the Secretary's office, 80 Federal street, Boston, Massachusetts. Cloth, 6 by 9 inches, 331 pp. Indexed. Portrait.

This is the tenth annual issue of this authoritative and valuable work which is used by textile manufacturers throughout the world. It presents in condensed form a summary of practically all of the reliable figures useful to a cotton manufacturer. In the statistical section new tables are included on production, shipments, sales, stocks and orders of certain standard cloths by quarters for 1926. In the Technical Section is given the construction of many of these standard fabrics.

The place of rayon in the industry is indicated by statistics given on the production, exports, imports and consumption of rayon yarn in 1926. Chemical method of identifying the different rayons is one of the many new features in the Technical Section which has been radically revised for the present issue. While the book is primarily for the use of members of the association it can ordinarily be obtained by persons outside of the organization who have need for it.

"United States Government Master Specifications for Rubber Boots." Circulars of the Bureau of Standards Nos. 348, 349 and 350, published by the Department of Commerce, Washington, D. C. Paper, 7 by 10 inches, Nos. 348 and 350 four pages and No. 349 five pages.

These specifications were officially promulgated by the Federal Specifications Board on June 10, 1927, for the use of the departments and independent establishments of the government in the purchase of rubber boots. Circular No. 348 refers to short, light rubber boots; No. 349 to hip; and No. 350 to short, heavy rubber boots.

"Some Vulcanization Tests of Guayule." By D. Spence and C. E. Boone. Technologic Paper, No. 353, 1927. Bureau of Standards, Department of Commerce, Washington, D. C. Paper, 8pp., 7 by 10 inches.

This paper is a part of Volume 22 of the Bureau of Standards Technologic Papers. It gives the results of some physical tests of guayule rubber grown in both Mexico and California. The results indicate that properly prepared guayule will compare favorably with Hevea rubber.

"A. S. T. M. Tentative Standards—1927." American Society for Testing Materials, 1315 Spruce street, Philadelphia, Pennsylvania. Cloth or paper, 824 pp. 6 by 9 inches. Indexed. Illustrated.

This annual volume contains 175 tentative standard specifications covering eight classifications of engineering materials including rubber for certain applications.

There are twenty-three specifications on construction and tests of insulating materials, rubber products and textile materials of vital interest to the rubber and insulation industries.

Recent Rubber Articles

New Chemical Reactions of Rubber Hydrocarbons.—H. A. Bruson, L. B. Sebrell and W. C. Calvert, *Ind. Eng. Chem.*, 19, pp. 1033-7 (1927).

Structure of Gutta Percha and Balata. Description of a new method of purification of these substances.—H. Miedel, *Kaut.*, 1927, pp. 230-2.

Accelerators and Sulphur in Vulcanization.—F. Balla, *Chim. Ind.*, May, 1927, pp. 470-3.

Anti-Oxidants for Preserving Rubber.—A. Gillet, *Chim. Ind.*, May, 1927, pp. 474-5.

Changing Accelerators in Rubber Mixtures.—W. Esch, *Gummi-Zeit.*, 41, pp. 2,644-5, 1927.

Review of Rubber Chemistry and Technology. 1924.—B. Buizov, *J. Chem. Ind.* (Russia), No. 3, pp. 24-8, 1925.

Chemical Washing Process in Rubber Industry.—G. Weissenberger, *Kaut.*, 1927, pp. 222-5, 248-51.

X-Ray Spectroscopy of Rubber.—J. R. Katz, *Chem. Zeit.*, 51, pp. 381-5, 1927.

From Coal to Rubber.—F. Hofmann, *Chem. Zentr.*, 1926, II, pp. 830-1.

Rubber Filler Systems.—P. Stamberger, *Kolloid-Zeit.*, 42, pp. 295-300, 1927.

New Rubber Derivatives.—G. Bruni and Dr. E. Geiger, *Rend. R. Accad. Naz. Lin.*, Vol. V, Series 6, No. 11, Rome, June, 1927. *I. R. Jour.*, Oct. 15, 1927, p. 737.

Researches on Slab Rubber. II.—G. Bruni and T. G. Levi, *Gior. Chim. Ind. App.*, April, 1927, p. 161.

Resistance to Traction of Vulcanized Rubber. II.—R. Ariano, *Nuovo Cimento*, Vol. IV., No. 6.

Synthesis of Rubber.—A. Maximoff, *Le Caout.*, Oct. 15, 1927, pp. 13,723-13,725. Tables.

Rubber Seed Oil.—Rudolph Ditmar, *Le Caout*, Oct. 15, 1927, pp. 13,725-13,728. Tables.

Resins in the Rubber Industry.—Louis Macre, *Le Caout.*, Oct. 15, 1927, p. 13,730.

Preparation of Rubber Solution.—Lescuyer and Villeneuve, *La Caout.*, Oct. 15, 1927, pp. 13,732-13,733.

CREAM FROM LATEX.—O. de Vries and N. Beumee-Nieuwland, *Archief.*, Sept., 1927, pp. 371-389, 390-396. Tables. English.

POWER USED IN THE PREPARATION OF CREPE.—M. Schroter and R. Riebl, *Archief.*, Sept., 1927, pp. 397-419. Diagrams. Tables.

RHIZOCTONIA ON HEVEA BRASILIENSIS.—J. Schweizer, *Archief.*, Sept., 1927, pp. 420-429. Photos, diagrams, bibliography, English summary.

TESTING RUBBER.—A. Schob, *Gummi-Zeit.*, Oct. 7, 1927, pp. 21-23.

MEASURING EFFICIENCY OF RUBBER MILLS.—*Gummi-Zeit.*, Oct. 7, 1927, 26. Illustrated.

VALUATION OF CABLE COVERS.—W. Esch, *Gummi-Zeit.*, Oct. 14, 1927, pp. 80-81.

STRUCTURE OF GUTTA PERCHA AND BALATA.—H. Miedel, *Kaut.*, 1927, pp. 230-2.

REACTIONS OF HYDROCARBONS WITH METALLIC HALIDES.—H. A. Bruson, L. B. Sebrell and W. C. Calvert, *Ind. Eng. Chem.*, 1927, 19. pp. 1033-37.

PERCHLORIC ACID AS OXIDIZING AGENT FOR SULPHUR DETERMINATION.—E. Kahane, *Ann. Chim. Analyt.*, 1927, 9, pp. 261-4

REPORT ON BRAKE LINING TESTS.—S. von Amnion, *J. S.A.E.*, Nov., 1927, pp. 551-70. Illustrated.

COMPOUNDING INGREDIENTS AND HEALTH HAZARDS.—J. N. Shirley, M. D., *Rubber Age* (N. Y.), Oct. 25, 1927. pp. 71-74.

MANUFACTURING AND TESTING COATED AUTO FABRICS.—M. N. Nickowitz, *Rubber Age* (N. Y.), Oct. 25, 1927, pp. 77-80.

PRESENCE OF A CHICLE-LIKE SUBSTANCE IN BANANAS.— H. von Loesecke, *Rubber Age* (N. Y.), Nov. 10, 1927, pp. 129-30.

TIRE MANUFACTURE. An outline of rubber working methods and trends in tire manufacture. Paper presented before the Milwaukee Section, S. A. E., Sept. 30, 1927.

PIGMENTS IN NITROCELLULOSE LACQUER ENAMELS.—H. A. Nelson and W. C. Norris. Research Bulletin, New Jersey Zinc Co., Palmerton, Pa.

LEATHER CEMENT RECEIPTS.—W. Hacker, *Kunst.*, 1927, No. 9, pp. 202-3, *I. R. Jour.*, Nov. 5, 1927, pp. 846-7.

VARIABILITY OF CEYLON ESTATE GRADES OF RUBBER. Report of the London Committee of the Ceylon Rubber Research Scheme on the results of investigations carried out at the Imperial Institute.—*I. R. Jour.*, Nov. 5, 1927, pp. 861-2.

TIRE OPERATING-BUS LINES. The essential requirements for satisfactory service.—L. G. Fairbank. *Jour. S. A. E.*, Nov., 1927, p. 579.

New Trade Publications

"Statistical Abstract of the United States—1926." Department of Commerce, Bureau of Foreign and Domestic Commerce, Washington, D. C. This annual abstract includes tabulations relating to area and population, and of all the financial and business activities of the nation and states.

"Index to Proceedings, A. S. T. M. Volumes 21-25, (1921 1925)" American Society for Testing Materials, 1315 Spruce street, Philadelphia, Pennsylvania. The index should be a convenience in locating articles or reports in the proceedings and to this extent should make a file of those proceedings more valuable.

"Grasselerator 808." This booklet of 26 pages issued by the Rubber Service Department of The Grasselli Chemical Co., New York, N. Y., states briefly much interesting and important information in regard to the application of this popular accelerator to reclaim, carbon black and other stocks. Many typical formulas are given, each supplemented by its test data of physical cure at a series of cures, and illustrated by graphs.

The Administration Report of the Director of Agriculture for 1926, Part IV—Education, Science, and Art (D), contains 69 pages of interesting and instructive data from Ceylon. A section devoted to rubber reviews standard production, price, leaf fall, soil erosion, seed selection, etc. The report may be purchased from the Government Record Office, Colombo.

Inelastic Specifications

The value of specifications generally for insuring production of serviceable goods is too well established to require defense; nor is it hard to visualize the mischief that might result from their abandonment. But it seems that there are specifications and specifications. Some may be so old and rigid as to even defeat their original purpose. Thus a case is cited where a railway association requires tube and cover of air brake hose to be stretched 400 per cent, then released, again stretched 400 per cent of the new length, held 10 minutes, and released. Yet after 30 seconds the length must not be over 12½ per cent greater, and after 10 minutes more not over 6¼ per cent greater. The easy way to meet such elaborate test is to so cure the hose that it can not possibly age well, and that is what happens.

Rubber technologists, like Bierer and Davis, claim that tens of millions of feet of air brake hose used in the United States have been overcured simply to obtain the permanent set so required. As cover-cracking troubled most, one manufacturer made up some hose with the specified cover and some with the cover he had found serviceable yet costing but 38 per cent of the other. In hard service side-by-side testing the specified cover broke down in five weeks and the cheaper grade was good at the end of a year.

It is contended that specifications have become so absurd that rubber goods may actually be rejected because they do not deteriorate. An instance is given where steam hose would not be accepted because its tube elongated 375 per cent before and after steam test, whereas specifications required that it elongate between 100 and 300 per cent. A fire hose tube made to disregard all chemical requirements for underwriters' hose has after four years' service tested 460 to 150 in elongation as compared with the specified, and 1,730 to 940 in tensile strength in favor of the "maverick."

Issue is also taken with a government requirement of at least 75 per cent new rubber by volume without specific reference to other ingredients, because a scientifically compounded product with but 68 per cent rubber can be made that will last longer and have much better physical properties. Prejudice continues, too, among over-zealous specification writers against the use of any reclaim in high grade rubber goods, yet technologists have proved that judicious use of choice reclaim may even improve many high class products, while affording equal serviceability at lower cost. The result is that many manufacturers can not produce as economically as they should and many customers are not getting the most for their money.

The remedy for such an unsatisfactory condition doubtless lies in a less arbitrary specification system; in the employment by consumers of technicians who, having followed the rapid advances in the art of rubber manufacturing, are willing to discard outworn formulas and who would employ modern inspection methods; and in a better realization of the practical value of performance tests. Were buyers, too, to place more confidence in rubber manufacturers who take real pride in their products the inelastic specifications problem might soon be solved.

WHEEL DIAMETER FOR BALLOON TIRES

Distance and measurement are relative, depending upon a number of things, and a difference of two inches in wheel diameter is a factor to be considered in tire mileage. The difference in the wear of 31 by 5.25 balloon tires over the 29 by 5.25 is about 20 per cent while the smaller size has only 10 per cent more road contact than the larger size in the course of a mile. The larger size makes 644.5 revolutions a mile, while a wheel equipped with the smaller size makes 726 more revolutions.

Heat generated from greater slippage, with the smaller size, is the cause of tread wear in greater proportion than the increase of the revolutions of the smaller tire over the larger one. These observations are based on tests made over the same road surface. With roads varying 500 per cent in abrasiveness, engineers claim that the proportion of tire mileage, with relation to sizes, is subject to great variation.—*Miller News Service.*

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

Number	Inquiry
1025	Source of supply for ground scrap.
1026	Manufacturers of metal compounding boxes.
1027	Firms specializing in scrap rubber.
1028	Gas mask manufacturers.
1029	Cotton seamless bags for reclaimed rubber.
1030	Concerns making bathing caps and shoes.
1031	Importers of Columbian sande gum.
1032	Information concerning manufacture of battery boxes by the cold process.
1033	Rubber gloves used in the acid trade.
1034	Sponge rubber bath mats.
1035	Makers of hard rubber dust grinders.
1036	Source of supply for hollands.
1037	Machine for making elastic hosiery.
1038	Footwear repair vulcanizer.
1039	Low temperature accelerator.
1040	Mold wash.
1041	Solvent recovery apparatus.
1042	Rubber covers for padlocks.
1043	Source of supply for uncured stock.
1044	Buyers of gutta percha.
1045	Firms making sponge rubber products.
1046	Manufacturers of rubber aprons.

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

Number	Commodity	City and Country	Purchase or Agency
27,758	Druggists' sundries	Cairo, Egypt	Agency
27,781	Rubber novelties	Durban, So. Africa	Agency
27,782	Rubber advertising articles	Stockholm, Sweden	Agency
27,804	Rubber coated cloth for raincoats	Sydney, Australia	Both
27,815	Rubber sheeting	Casablanca, Morocco	Both
27,835	Crepe rubber in sheets	Stavanger, Norway	Purchase
27,855	Rubber goods of all kinds	Punta Arenas, Chile	Agency
27,912	Shoes, overshoes and tires	Prague, Czechoslovakia	Agency
27,932	Tennis balls	Johannesburg, So. Africa	Both
27,933	Fancy floor mats and rubber threads	Cologne, Germany	Both
27,934	Automobile tires	Lille, France	Agency
27,935	Automobile tires	Penang, S. S.	Agency
27,951	Druggists' sundries	Vienna, Austria	Purchase
27,988	Shoes and small size hot water bottles	Shanghai, China	Agency
28,031	Automobile tires	Budapest, Hungary	Both
28,038	Druggists' sundries	Johannesburg, So. Africa	Purchase
28,051	Waterproof cloth	Pietermaritzburg, So. Africa	Purchase
28,061	Rubber soled canvas shoes	Funchal, Madeira	Agency
28,083	Druggists' sundries	Alexandria, Egypt	Agency
28,084	Automobile tires	Chicoutimi, Canada	Purchase
28,085	Scrap rubber	Lisbon, Portugal	Agency
28,086	Rubber shoes and overshoes	Oslo, Norway	Agency
28,087	Automobile tires	Tallinn, Estonia	Agency
28,088	Rubber soled canvas shoes	London, England	Agency
28,089	Druggists' sundries	Cairo, Egypt	Agency
28,104	Automobile and motorcycle tires	Leipzig, Germany	Either

A GREATER AMOUNT OF SERVICE MAY BE OBTAINED FROM TIRES IN the winter than in the summer months. Exhaustive tests have shown that tires run on snow or in cold, damp weather show no appreciable tread wear.

CANADIAN EXPORTS OF PNEUMATIC CASINGS FOR THE FIRST NINE months of 1927 numbered 1,292,894 as compared to 817,791 for the same period in 1926. Inner tube exports reached 1,413,886 in 1927 as compared with 787,499 in 1926.

Foreign Trade Circulars

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C.

Number	Special Circular
1663	Italian Tire Exports During First Half of 1927.
1666	Rubber Invoiced During the Week Ended October 15, 1927.
1670	September Imports of Golf Balls Into the United States.
1672	Rubber Invoiced During the Week Ended October 22, 1927.
1673	Canadian Tire Exports During September, 1927.
1674	Crude Rubber Reexports From the United States, September, 1927.
1675	Canadian Tire Exports Heavy; First Nine Months of 1927.
1676	Canadian Exports of Footwear; First Nine Months of 1927.
1677	Canadian Exports of Belting and Hose; First Nine Months of 1927.
1678	Imports of Hard Rubber Combs; First Nine Months of 1927.
1679	Imports of Other Manufactures of Hard Rubber; First Nine Months of 1927.
1680	Imports of Belting for Machinery; First Nine Months of 1927.
1681	Imports of Druggists' Rubber Sundries; First Nine Months of 1927.
1683	Dealers' Stocks of Automobile Tires as of October 1, 1927.
1686	Rubber Invoiced Week Ended October 29, 1927.
1688	Netherlands Druggists' and Allied Rubber Sundries Market.
1689	Philippine Rubber Goods Import Statistics, 1925-1926.
1690	British Exports of Casings, September and First Nine Months of 1927.
1691	Rubber Invoiced During Week Ended November 5, 1927.
1694	British Exports of Footwear; September and First Nine Months of 1927.
1695	Cuban Rubber Goods Import Statistics, 1925-1926.
1696	Comparative Exports of Footwear from United States, Canada, and United Kingdom; First Nine Months of 1927.
1697	Ceylon Rubber Goods Import Statistics, 1925-1926.
1698	Netherland Rubber Goods Import Statistics, 1925-1926.

PROMOTING PURCHASING POWER

Most manufacturers pursue marketing methods conducive to true stability, but some still confuse high-pressure salesmanship with real enterprise. The latter yields lasting results, but the former, like the whip to the jaded horse, may indeed get quick action but it also begets reaction. Too many still figure on capacity production costs, ignore the extent of dealers' stocks, and resort to such artificial stimuli as to weaken the price status and glut the market. Production in excess of a nation's ability to absorb must eventually result in forcing prices down while keeping selling costs up; and this applies as cogently to the rubber as to any other basic industry.

Economists contend that the wiser course lies not in forcing people to buy more than they are prepared to purchase, but in developing their ability to buy more. How much more can they buy? The census gives the normal growth of the American population as about 1½ per cent, yet it is well known that the production ratio is well above that figure. The explanation of the nation's growing absorptive capacity may be found in more general employment, an increasing number of well-paid workers, and a steady rise in the standard of living. If that favorable ratio is to be increased, or perhaps maintained, some way should be found to safely develop American purchasing power.

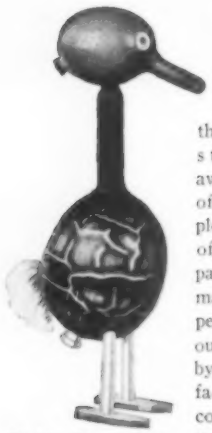
Helpful in this direction might be a study of the means adopted by the government, banking, industrial, and transportation interests in averting the wide swings that formerly brought booms and panics. A campaign of education emphasizing the danger of reckless trade practices would be useful; and if this were supplemented with a concerted effort to extend and correlate the activities of the numerous agencies organized to lessen waste, standardize production, provide better living conditions, and promote the general welfare not only might the bane of overproduction be warded off but the national buying power be perceptibly quickened and well sustained. Herein lies a chance for great trade conventions to formulate a policy and outline a programme that would do the nation a word of good.

MOTOR VEHICLES IN UNITED STATES

Passenger cars comprise 87 per cent of the total number of motor cars in use in the United States, trucks 12.6 per cent and buses .4 of 1 per cent. Of the 80,000 vehicles of the latter type in operation during 1926, 41 per cent were in use as school buses, 4 per cent were engaged in hotel, sight-seeing and miscellaneous service, and 54 per cent were used for carrier service of various kinds.

New Goods

When Santa Claus

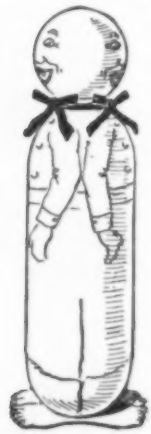


Daddy Long Legs

IN the vast array of novelties and toys displayed to attract the eye of the joyous youngster, impatiently awaiting the arrival of Santy, and deplete the pocketbook of his not so impatient parent, none make a stronger appeal than the various articles devised by the rubber manufacturers. Vivid colors, lifelike features and fascinating designs have combined to place these toys at the top of the list as the most popular with the eager little visitors to the various exhibits. For sanitary reasons they are, of course, strongly favored for the very young child as they are so easily washed, the colors so well applied that there is no danger of poison or fading.

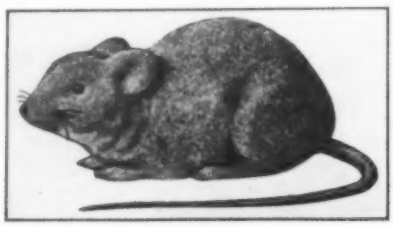
Comical Pig

As large manufacturers of toy balloons and novelties, the Anderson Rubber Co., Akron, Ohio, has several special numbers which have only recently appeared upon the market. Daddy Long Legs is a unique novelty and provokes great mirth wherever shown. This strangest of all birds has a mottled body, corrugated neck and red tail which makes it a specimen of bird eagerly sought as a souvenir. The Charleston Coon, or the Black Bottom Dancer, because of the springs on his feet, may execute the latest and most intricate steps ever devised, and his joyous expression lends added attraction to the dance. The Comical Pig is one of the funniest of all the great big tumbling numbers, and inflates to twenty-four inches. The De Luxe balloon is a combination of exquisite colors in which clowns and cats and grotesque figures roam in geometric confusion. These are only a few of the more recent inflated articles made by this manufacturer whose assortment of balloons and squawkers is unusually large.



Goofy and Oofey

The Faultless Rubber Co., Ashland, Ohio, is showing a rubber mouse which is so exact a reproduction of the real thing that it will fool even the family cat, and will cause many a fright and laugh. It is made of sponge rubber and can be obtained in either of four styles: Gray with rubber tail; white with rubber tail; "come-back" type, gray with rubber thread; or white with rubber thread. It is particularly funny when placed on the Christmas tree and will cause endless enjoyment to the practical joker.



Mouse

The musical Bonzo and musical little boy are from the factory of the "Vulkan" Gummiwarenfabrik Weiss & Baessler A.-G., Berlin, W. 35, Germany. The toys are hand painted and give a funny little squeal when pressed. Bonzo's expression is very comical as he sits with head to the side and eyes half-closed looking as if he has just been up to some mischief. The little boy's rosy cheeks and roguish eyes are exceptionally appealing, and he stands with hands thrust into his pockets. His overalls and cap are painted yellow and red, the rest of the figure tinted a flesh color.

Baby Aire

Duck Soap Dish

Toyco balloons and balls are used the world over in the educational processes of play and are made by The Toycraft Rubber Co., Ashland, Ohio. The sponge rubber come-back balls are held by a thirty inch rubber string which is anchored by a metal ring inside the ball. They are wonderful bouncers and cannot collapse. The Tip-Top penny squawker is an old favorite, always found on festive occasions when exuberance demands an outlet and particularly favored on New Year's Eve and election nights. Its principal function is to make noise, and the Tip-Top illustrated performs this feature in a creditable manner.

As a publicity stunt for toy departments in department stores during the holiday season, Little Change has proved to be a huge success and has attracted much favorable comment. The elephant apparently drinks the water which the boy pumps from the well, but the water, which is real, is automatically drawn into the pump again. Chang breathes, his head, trunk and arms working mechanically and the hide on his legs also moves, seemingly caused by the inner twitchings of the nervous animal. He is covered with a coating of liquid rubber which serves to make him more realistic and gives his hide a more natural look. Another style of elephant is also manufactured. He is made in a sitting position and his head sways from side to side, with eyes, ears and trunk working mechanically. The height of the animal is 7 feet 6 inches, its width 4 feet, 8 inches and it is 8 inches deep. Messmore & Damon of 404-408 W. 27th street, New York, N. Y., are the manufacturers. This company makes a specialty of groups and figures to be used as display, most of the various objects moving mechanically.

Musical Little Boy

De Luxe Balloon

The character dolls made by the Hanover Rubber Co., Hanover, Germany, represented in this country by George Borgfeldt & Co., 111-119 East 16th street, New York, N. Y., have had a new member

and Specialties

Works With Rubber

added to their number. This is a traffic officer who stands with hand uplifted giving a signal of "stop." He may also lift his cap to scratch his head when congestion goes beyond his powers of adjustment. The figure is made in natural size. These dolls, with their removable hats, are all made in fast colors which are non-injurious and which can be easily and effectively washed. The trade name under which they are known is "Excelsior" and the assortment is large.

Musical Bonzo

Goofy and Oofey are barefoot tumbling rubes, the very latest thing in rubber novelties. The balloon body, when inflated, stands twenty-three inches high and the feet are of heavy board. The toy is lithographed in three bright colors. The Wooster Rubber Co., Wooster, Ohio, includes this number in its series of Sunshine toy balloons. Another number which has come in for its share of popularity is Johnny Jump Up. The body is an airship balloon imprinted with a figure. When inflated the neck of the balloon is fastened into a piece of wood and a neck tie of crepe paper is tied around the upper end, thereby forming the neck. The piece of wood being round at one side, makes the doll stand up on its feet, no matter how it is put down. The Giant Flying Whale is still another novelty. The body of the fish consists of a large balloon inflating to about twenty inches. Head, tail and fins are of cardboard, lithographed in five bright and attractive colors. It is easily assembled, the parts placed in an envelope which contains complete instructions on how to put together. A string is attached to the fins, so that the fish can be fastened to a stick or suspended from the ceiling, etc., for decorative purposes.

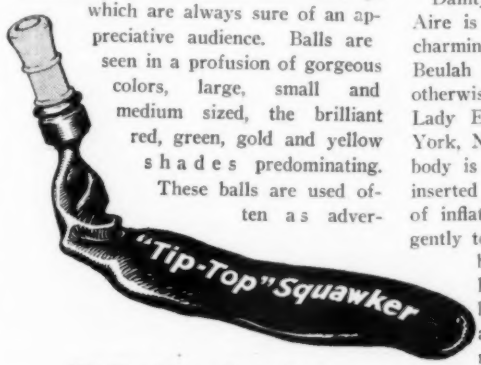
Come-Back Ball

Slim Jim, as his name implies, is unusually long and of small diameter, giving an entirely different appearance from the ordinary airship balloons. The balloon inflates 44 inches in length and is about four inches in diameter. It is the latest addition to the line of the Oak Brand balloons made by the Oak Rubber Co., at Ravenna, Ohio.

A clever little novelty balloon is made by Dr. Dorogi & Co., Gummifabrik A.-G., Budapest-Albertfalva. When inflated, the balloon represents the figure of a man sitting in a canoe and it is colored in varied shades to bring out this resemblance.

Little Chang Drinks

These are only a few of the more recent rubber toys. The stores have their counters filled with all the old stand-bys which are always sure of an appreciative audience. Balls are seen in a profusion of gorgeous colors, large, small and medium sized, the brilliant red, green, gold and yellow shades predominating. These balls are used often as advertising media, the name and business of the advertiser plainly and conspicuously placed and carried so that all may read. They are more easily disposed of than broadsides, as children's hands are always eagerly outstretched for the bit of vivid color, and are never thrown carelessly to the ground after a brief glance as is often the case when a card or other copy is passed out.



Tip-Top Penny Squawker

Inflated animals are frequently seen as decoration for the show windows and the various types and styles have already been described in previous pages of this department. Rubber dolls have been favorites for so many years that most of them now on display have been manufactured for some time.

Traffic Officer

A new style of soap dish is an item furnished by the I. B. Kleinert Rubber Co., 485 Fifth avenue, New York, N. Y. This dish is most appropriately in the form of a duck which floats on top of the water and will keep the soap within easy reach while taking a bath. It is, of course, primarily intended to furnish amusement and distraction to the little ones but is also a useful article for the adult. The dish is made in several colors and may be selected to tone in with the color used for other furnishings of the bath room, rubber in various brilliant shades being adaptable for this purpose and many beautiful styles put out by the Kleinert company.

Charleston Coon

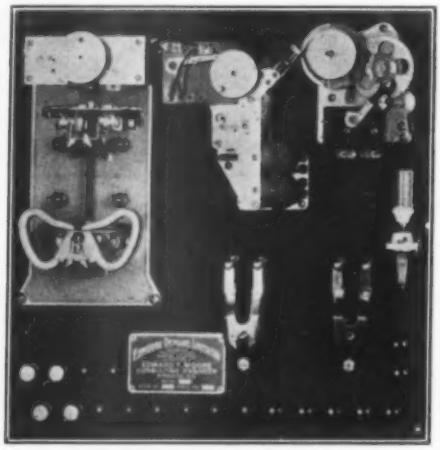
Dainty little Baby Aire is another of the charming designs of Beulah Louise Henry, otherwise known as Lady Edison, of New York, N. Y. The doll's body is made entirely of rubber, a valve inserted in the arm being used as the means of inflation. She may be made to move gently to and fro, backward and forward, by merely tapping her lightly on the back, her swayings and motions not requiring much imagination to seem the gurgles and cooing of a real, live baby. The body may be dressed in any clothes and if inadvertently it is pricked with a pin or needle, a new body may be obtained at very small expense.

Rubber boats have in recent years been made so realistic that they have largely replaced the wooden models and gray men o' war may be had as well as red sailboats and many-hued canoes.

Slim Jim

Edmore Power Demand Limitator

Executives of rubber manufacturing plants, always alive to the opportunity for reducing costs of plant operation, will be interested in the electrical device herewith illustrated. This power demand Limitator is designed to eliminate or at least control and reduce the peak demand on electrical power. The device is made in several sizes and models for varying purposes of control, the Model No. 2 being of particular interest to rubber



Master Control Cabinet

manufacturers. The function of this device is to disconnect certain portions of the electrical load when it reaches a certain predetermined peak. The main actuating element of this apparatus consists of an electro-magnetic mechanism equipped with a load cam and a contact device which can be set for any desired load value and which is connected to the watt-hour meter contact device.

In operation, the greater the consumption of energy the faster the watt hour meter will rotate and the greater the number of impulses transmitted by the contact device in the watt-hour meter. The greater the number of these impulses the faster will the electro-magnetic mechanism respond and the greater the movement of the load cam. The load adjustment cam comprises two members, an inner one permanently connected to the main shaft of the electro-magnetic mechanism and an outer ring or cam which can be rotated in either direction by means of hexagonal thumb nuts. These thumb nuts are locked in position and to secure load adjustment the load adjusting thumb nut is rotated in a clockwise direction to secure higher load adjustment and in the reverse direction to secure lower load adjustment. When the point of the cam coacts with the fingers of the contact device mounted upon a small panel on the front of the electro-magnetic mechanism the contacts on these fingers are closed. This causes the control relay to operate and actuate the auxiliary equipment. In conjunction with the integrating electro-magnetic mechanism, a timing device actuates a timing cam designed for the particular time interval specified in the power company's rate schedule.

When used with motor driven rubber mills, the Limitator operates the clutch between the motor and the mill line. The motor is disconnected during the peak and reconnected when the peak period has passed. Electro-magnetic clutches are operated through a contactor and pneumatic clutches are automatically controlled by a solenoid air valve. Thus, full automatic operation is secured with either type of clutch.

Actual experience has shown that in a majority of cases one or two exceptional and readily avoidable peaks are responsible for the costly "demand charges." Usually the load is disconnected for so brief a period that no interference with normal production or quality of product is experienced. In one rubber plant investigated the load demand is set for five minute intervals. A Limitator is connected to the mill line and operates on an average of four times weekly, the disconnection period averaging about one minute. No difficulty is experienced in again starting the mills and although the motor is of the reversing type it has not been found necessary to reverse the mills or to unload them in order to start them after the disconnecting period.

Study of a weekly load curve in a large industrial plant showed a single high peak of 4,800 k.w. By limiting the load to 3,950 k.w., which figure was exceeded only five times during the week, the "demand" was reduced by 850 k.w. and a monthly saving of $850 resulted from five brief load reductions.—Edward T. Moore, 500 Cahill Building, Syracuse, New York.

Penetrometer for Shock Absorbers

The hardness or cure of the rubber shock insulating blocks used for cushioning vibrations on motor trucks, busses, etc., is of such importance that every rubber shock insulator is inspected for hardness by a penetrometer or hardness tester of some sort. A testing instrument well adapted for this purpose is the one here illustrated.

Penetrometer

This instrument is built from a standard Firestone penetrometer and stand from which the movable platform with spring actuation has been removed and a weight substituted. The two Firestone parts retained are the base with vertical shaft and the arm for the instrument proper.

In making this adaptation the upper face and outside diameter of the arm were finished off. The weight with clearance hole for vertical shaft was finished at the bottom to center accurately on the boss of the arm, and is held by two set screws. The device measures the resistance to penetration of the rubber or its hardness by applying a definite load upon a point of definite shape and depth against the surface of the rubber and accurately recording the effect on a calibrated scale.

To use the instrument the weight-carrying arm and penetrometer is raised high enough to allow a flat surface of the shock insulator to be placed on the base. The weight is then carefully lowered allowing the penetrometer point to rest upon a flat portion of the rubber block, and the reading taken. To insure proper test, the bottom face of the instrument through which the point protrudes must, in its entirety, rest on a surface of rubber. Several tests should be made on different sections of the rubber, some near the edges and some near the center of the block. Sections of the part of different thicknesses should especially be tested.

Owing to the interior construction of the instrument, the dial is marked counterclockwise and to avoid mistakes when obtaining readings, one must always notice whether the hand on the small dial is between zero and 50 or between 50 and 100, in order to know whether the reading is 10 or 60. Soft rubber gives a high reading on the scale, and hard rubber a low reading.

A rubber shock insulator properly compounded and cured, should give a reading of 47. This figure is comparative only and has been predetermined especially for shock insulator stock. The permissible variation is plus or minus four points or from 51 to 43. Any parts which do not give readings between these limits should be rejected.

Financial and Corporate News

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Boston Woven Hose & Rub. Co..	Pfd.	$3.00	Dec. 15	Dec. 1
Boston Woven Hose & Rub. Co..	Com.	$1.50	Dec. 15	Dec. 1
Firestone Tire & Rubber Co...	7% Pfd.	1¾% q.	Nov. 15	Nov. 1
Goodrich, The B. F., Co.....	Com.	$1.00 q.	Dec. 1	Nov. 10
Goodrich, The B. F., Co.....	Pfd.	$1.75 q.	Jan. 2, 1928	Dec. 9
Goodyear Tire & Ruber Co.....	Pfd.	$1.75 q.	Jan. 1, 1928	Dec. 1
Goodyear Tire & Rubber Co. (initial)	1st Pfd.	$1.75 q.	Jan. 1, 1928	Dec. 1
Hood Rubber Co.....	Com.	$1.00	Dec. 31	Dec. 20
Miller Rubber Co.....	Pfd.	$2.00 q.	Dec. 1	Nov. 10

New York Stock Exchange Quotations

November 21, 1927

Company	High	Low	Last
Ajax Rubber, com.....	8½	8¼	8½
Fisk Rubber, com.....	15⅞	15¾	15¾
Goodrich, B. F., Co. (4) com.....	78⅞	77	77
Goodyear Tire & Rubber, com.....	59⅛	58¼	58¾
Goodyear Tire & Rubber, 1st pfd.....	95¾	95⅛	95¾
Intercontinental Rubber (1).....	18⅞	17	17¾
Kelly-Springfield Tire, com.....	31⅜	30	30⅛
Kelly-Springfield Tire, 8% pfd.....	95	95	95
Lee Rubber & Tire, com.....	13	13	13
Miller Rubber, com (2).....	20½	19⅜	19¾
United States Rubber, com.....	53⅜	51⅜	52¾
United States Rubber, 1st pfd. (8).....	96½	96¼	96½

Akron Rubber Stock Quotations

November 21, 1927

Company	Bid	Asked
Akron Rubber Reclaim.....	19	19¼
Akron Rubber Reclaim, pfd.....	..	100
Falls	4¾	6
Faultless	37	..
Firestone	155	160
Firestone, 6% pfd.....	106	107
Firestone, 7% pfd.....	106½	107
General	..	174½
General, 7% pfd.....	104	110½
Goodrich	78	79
Goodrich, pfd.	106	108
Goodrich, 6½s	107½	108
Goodyear	58¼	59½
Goodyear, 1st pfd.....	94½	95½
Goodyear, 5s 28.....	100⅜	100½
Goodyear, 5½s 31.....	100	100½
Goodyear, 5s 57.....	94⅜	94½
India, com.	15	16½
India, 7% pfd.....	..	90
Mason	½	2
Mason, pfd.	7	11
Miller	19	20½
Miller, 8% pfd.....	87	89
Mohawk	17	22
Mohawk, 7% pfd.....	50	60
Rubber Service Lab.....	50	..
Seiberling	34	35
Seiberling, 8% pfd.....	101	..
Star	2½	4

ANTIFREEZE ENEMIES OF RUBBER

Automobile radiator hose is often discarded and its maker accused of using a faulty compound when the blame lies not in the rubber but in the abuse of it with harmful antifreeze mixtures. Chemists say that wood and grain alcohol (the latter normal or denatured) when added to water in a radiator will not appreciably deteriorate rubber connections, but that two other refrigerating agents much used, glycerol and ethylene glycol, tend decidedly to soften rubber and hence can not be approved.

THE AVERAGE CHARGE FOR RETREADING A 30 BY 3½ TIRE IN Buffalo, New York, is given as $3.65. From this minimum the rate runs throughout the United States to a maximum of $11.50 in Kansas City, Missouri. Still flivver owners in the latter city find it cheaper to patronize home industry than to have their cars reshod in Buffalo.

New Incorporations

AMSTERDAM RUBBER CORP., October 28 (New York), capital stock 2,000 shares, 1,000 shares pfd. par value $25 and 1,000 shares com. no par value. G. A. Dorman, 670 West End Ave., W. H. Lofink, 1392 Boston Rd., F. J. Brown, 36 West 44th St., all of New York City. Principal office, Manhattan. To manufacture tires, tubes and rubber goods.

BALLOON RUBBER HEEL CORP., October 1 (Delaware), capital stock 100,000 shares Class A no par value, 50,000 shares Class B no par value, 100,000 shares Founders par value $1. E. E. Craig, A. L. Raughley, M. S. Cook, all of Dover, Del. Principal office, 100 South St., Boston, Mass. To manufacture rubber heels.

DEXTER RUBBER CORP., November 5 (New York), capital stock 5,000 shares com. no par value, 1,000 shares pfd. no par value. H. M. Webster, pres., B. S. Byall, vice pres., M. H. Snow, vice pres., L. A. Atz, sec. and treas. Principal office Goshen, N. Y. To manufacture tire flaps, patches, rubber kits and rubber wash aprons.

L. HILSENBECK, INC., October 28 (New York), $10,000. L. Hilsenbeck, 242 East 59th St., A. Kelly, 3133 Broadway, both of New York City; W. Hansen, 321 Sherman Ave., Teaneck, New Jersey. Principal office, Manhattan. To manufacture rubber products.

ROEBUCK MFG. CORP., November 1 (New York), capital stock 1,000 shares pfd. par value $100, and 240 shares com., no par value. J. W. Pincott 435 East 57th St., M. Leddy, 1225 Park Ave., J. W. Ryan, 435 Ft. Washington Ave., all of New York City. Principal office, Queens County. To manufacture rubber boots.

TIRE SALES CORP., November 9 (New York), $5,000. J. D. Wise, S. Hedden and R. G. Heiner, all of 43 Exchange Place, New York City. Principal office, Manhattan. To manufacture tires.

VULCAN RUBBER & CHEMICAL CO., Inc., October 26 (New York), capital stock 20 shares pfd. par value $10 and 3,000 shares com. no par value. R. J. Panaro, 1202 Second Ave., T. B. Jenkins, 408 West 57th St., E. W. Chase, Jr., 123 West 69th St., all of New York City. Principal office, Manhattan. To manufacture tires, etc.,

YELLIN RUBBER CO., INC., October 28 (New York), $50,000. H. Yellin, 5304 15th Ave., B. I. Kamen, 1637 East 24th St., S. S. Ostertag, 1580 East 9th St., all of Brooklyn, N. Y. Principal office, Queens County. To manufacture rubber products.

GOODYEAR'S HOUSE

The accompanying illustration shows the house in which Charles Goodyear lived at Naugatuck, Connecticut, while completing his development of the process of vulcanizing rubber. It was in this

U. S. Rubber News

Home of Charles Goodyear

house that he lived when the first pair of vulcanized rubber overshoes were made one night by him before a group of relatives and friends. The house is still standing.

CONGRESS GAITERS WITH RUBBER WEB GUSSETS ARE BEING WORN again. This is not a fashion note, for the vogue is confined to molders in some American foundries who find that such footwear protects, better than laced shoes, their insteps from splashes of molten metal.

The Rubber Industry in America

Ohio

Considerable improvement in automobile tire sales was noted in November, especially in the first line passenger car casings. This was reflected in gradual upward production trend in factories throughout the Akron district. Practically all Ohio rubber plants are operating at higher production rate than was the case two months ago.

Retail tire demand was stimulated by a 5 per cent reduction on first quality tires, which went into effect November 1. The readjustments did not apply to inner tubes, secondary tire lines nor heavy duties. Prices appear now to be fairly well stabilized, and with prospects for higher crude rubber costs in the next few months, Akron observers are of the opinion that tire prices are more likely to advance than decline. Tires are being sold today at the lowest level on record.

Indications are that spring dating, which started two months earlier this year, will go over bigger than ever before. Dealers already are ordering their spring stocks in fairly large quantities. Spring dating carries a protection against price decline until May 15 of next year.

Another favorable factor in the tire situation is the fact that the Ford factories appear finally to be getting into production on the long awaited new car. Akron tire plants, including Firestone, Goodrich, Goodyear, Mason, and Miller, are working on orders for Ford, it is understood. The original equipment on the new car, it is reported, calls for a casing 30 by 4.50, slightly larger than the type used on the old car.

Although no boom is looked for, Akron rubber manufacturers are confident of good business in the last period of this year, extending through 1928. Factory operations close to capacity are looked for during the winter months. Akron authorities estimate that renewal tire sales during 1928 should exceed 50,000,000 casings. Original equipment demands will be much heavier, it is believed, with Ford in the field again on a quantity production basis. Shipments of rubber footwear are ahead of last year, and sales for 1927-28 undoubtedly will be larger in the aggregate than those of the past season. Style and color are playing a more prominent part in the footwear business.

General Tire & Rubber Co. salesmen from Ohio, Indiana, Michigan, Kentucky, West Virginia and Western Pennsylvania attended a two-day sales conference in Akron, November 21 and 22. Approximately 250 were present. President William O'Neil, addressed the salesmen at a banquet in the City Club, and outlined policies for 1928. The present has been a banner year, he said, and prospects are bright for next year.

The Faultless Rubber Co., Ashland, Ohio, announces that C. D. Hubler has been elected vice president and treasurer and George A. Meiler secretary of the company. Mr. Hubler succeeds P. A. Myers, who recently retired from active service. T. W. Miller was reelected chairman of the board, J. C. Lawrence, president, and E. F. Miller, factory manager.

The B. F. Goodrich Co., Akron, Ohio, held its regular directors' quarterly meeting on October 26, 1927. It was stated that during the quarter ended September 30, the company continued to maintain satisfactory sales and profits. A dividend of $1.75 per share on the outstanding preferred stock was declared payable on January 2, 1928, to holders of record at the close of business, December 9, 1927. A dividend of $1.00 per share on outstanding common stock without par value was declared payable December 1, 1927, to holders of record at the close of business November 10, 1927.

RADIO FOR FIRESTONE PLANTATION

It is reported that radio communications will be established between the Du River headquarters of the Firestone Plantation Co. in Liberia and the Akron headquarters. The equipment is now being shipped to Monrovia, and it is thought that this is the first American company to establish direct radio communication with Africa.

The Firestone Plantations Co., it is said, is steadily increasing its planting and engineering organization, and developments are being pushed forward with vigor. About 15,000 acres of jungle have been felled, cleared and planted with rubber trees.

Lambert Tire & Rubber Co., Akron, Ohio, states that Charles B. Spaulding, formerly connected with the McMyler Interstate Co., has been appointed sales manager. His first contact with the tire industry was salesman for rubber machinery. It is reported that Lambert, which produces a semi-solid, "puncture proof" tire, shortly will announce a new pneumatic casing.

The Mason Tire Rubber Co., Kent, Ohio, advertises an improved line of balloon tires in its spring dating proposition sent to dealers. These are larger, containing more rubber and 20 per cent stronger Hylastic cord carcass. The latter feature has been obtained by a double milling process of spinning.

India Tire & Rubber Co., Akron, Ohio, has announced a new Super-Service balloon tire, built of the best quality materials, and without regard to cost, according to Sales Manager C. C. Prather. The price is considerably higher than other balloon tires. The casing is manufactured in nine sizes, with actual measurements showing nearly a double oversize.

The India Tire & Rubber Co., Akron, Ohio, has announced, in a statement recently released by P. C. Searles, secretary, the reduction of its bank loan by over one-half million dollars. He also announced that inventory had been cut down to a figure slightly higher than half that on June 31, 1927, which was $1,910,000, and on October 31, $1,045,000. Inventory on December 31, 1926, was $1,343,000.

The Serugo Rubber Co. has been organized to succeed the B & M Rubber Co., of Cuyahoga Falls, Ohio, and will specialize in the manufacture of finger cots. William Metzler is president and sales manager; Charles Shorr, treasurer and production manager; and John Hadfield, vice president and general manager.

The World Rubber Co., Wadsworth, Ohio, is on a working capacity of 24 hours per day. The World company makes all sizes and shapes of quality toy balloons in assorted colors, both plain and for advertising.

The Mansfield Tire & Rubber Co., Mansfield, Ohio, has started an addition to the south wing of its factory which will cover 90,000 square feet of space. New and modern equipment will be installed, and tires will be manufactured according to the most up-to-date and exclusive methods. G. W. Stephens is president.

P. W. Litchfield, president of the Goodyear Tire & Rubber Co., Akron, Ohio, told members of the Cleveland Chamber of Commerce in a recent address that opportunities today lie not so much in the factory as selling and distributing. "Concerns are more and more making a scientific study of advertising and proper guidance of salesmen by pooled experience," he said. "They have demonstrated that just as it has been found profitable to direct the man in the shop to produce, so the salesman can be scientifically directed to sell."

The B. F. Goodrich Rubber Co.'s sales of rubber footwear are running 35 per cent ahead of last year, and total output for the 1927-28 season bids fair to be the largest in the history of the company. Sales of Zipper boots are being stimulated by an aggressive advertising and selling campaign. Gates Ferguson, the new Goodrich advertising manager, has struck a new note by emphasizing the fact that Zippers are made in various colors to match the feminine wearer's gown. Therefore women should buy not one but several Zippers for the season, to harmonize with their costumes.

The Barr Rubber Products Co., Sandusky, Ohio, plans to build a $30,000 addition to the plant on East Market street. The new structure will be of two story brick and steel construction and will be ready for occupancy about January 1. Balloons only will be manufactured in the new quarters, departments for the manufacture of hollow rubber balls and other novelties will be retained in the old building. The company is also adding additional equipment, such as mill, steam jacketed molds and ball equipment, and plans to increase the capacity of the dipped goods department. Nelt Barr is president.

PILE FABRIC WITH RUBBER BACKING

A pile fabric made with a thin and flexible rubber foundation instead of the customary warp, is intended for automobile floor coverings and upholstery. The material consists of mohair or similar hair very cleverly introduced into a thin rubber foundation, on the back of which is a plain piece of dark cotton material so that it greatly resembles the back of an ordinary pile fabric. It was originally developed for use as automobile floor covering but has since been produced with a finer pile as an upholstery fabric.

SCRAP RUBBER RATES

The Southern Freight Association plans to establish a rate on scrap rubber of 47½ cents from Columbia, Mississippi, to Chicago, Illinois, and 65½ cents to Akron, Ohio.

Massachusetts

Rubber footwear volume continues unabated among the Bay State plants, and the outlook for the future is good. The Vermont flood disaster will stimulate boot and heavy goods business, just as the Mississippi flood increased sales of this merchandise in the western territory. Dunham Bros., Bellows Falls, Vermont, New England distributers of Ball Band footwear were not in the flooded district, but were in a favorable position to supply merchandise after the disaster, as were the Hood and United States rubber branches in Springfield, Massachusetts.

D. Hardwick Bigelow, superintendent of the Converse Tire & Rubber Co., has joined Hale and Waters, of Boston, an investment security house. Mr. Bigelow is a Yale '24 man, and rowed on the varsity crew.

The Cambridge Rubber Co. addition is nearing completion, and will be ready for occupancy by the first of the year. Warren H. MacPherson, president, is in Europe on a business and pleasure trip.

Clifford H. Goodnoh, purchasing agent of the Clifton Manufacturing Co., has just completed a tour of federal jury duty.

The Hood Rubber Co., Watertown, Massachusetts, has resumed dividends on its common stock of $1 per share, payable December 1. Dividends were suspended last spring after the announcement of the loss sustained by the company in the fiscal year ending March 31, and their resumption is an indication that present earnings are satisfactory and the outlook good. The declaration caught the market unprepared, and the stock advanced five points to 44, on the Boston Stock Exchange.

The Fisk Rubber Co., Ninigret division, New Bedford, Massachusetts, has been closed for an indefinite period. "Due to conditions prevailing at this time, it has been decided not to follow the former practice of storing cord fabrics in excess of requirements," was stated by the general manager. When running full the plant employs about 1,100 hands.

Devon Mills, the Goodyear Tire & Rubber Co. fabric unit at New Bedford, Massachusetts, is closed for an indefinite period. Seasonable slackness is given as the reason.

The Quinlan Tire Co., 238 Stuart street, Boston, Massachusetts, has been appointed by the Gillette Rubber Co., Eau Claire, Wisconsin, as distributer in that section.

Vultex Corp. of America, Cambridge, Massachusetts, a subsidiary of Vultex, Ltd., a British concern, has recently been organized to manufacture and sell vulcanized latex. Hewett MacPherson, Watertown, Massachusetts, is president; and Warren MacPherson, Cambridge, Massachusetts, is treasurer.

Frank C. Stetson is eastern district manager of the Gillette Rubber Co., Eau Claire, Wisconsin, with headquarters in Boston, Massachusetts.

Massachusetts employment figures show increase in the rubber industry, 9,426 being on footwear payrolls for October as against 9,032 for the month previous, and rubber goods, including tires and tubes, increased from 2,711 to 2,828.

Raincoat and rubber clothing manufacturers have had a wonderful season, but just now are easing up slightly. American, Cambridge, Clifton, Fine, Meade, and Stoughton are some of the rubber clothing mills in this section.

Converse T. & R. Liquidates

The Converse Tire & Rubber Co. has discontinued the manufacture of tires and tubes and is being liquidated. This company rented manufacturing space in the Malden plant of the Converse Rubber Shoe Co., from whom it purchased processed raw material. The company had been operating profitably, on a production of 400 tires and 1,000 tubes daily, but the expanding business of the Converse Rubber Shoe Co. made it imperative that the manufacturing space being used by the tire company be converted for footwear use. The directors decided that competitive conditions in the tire industry made it inadvisable to seek a new location at this time, especially since the company owned no mill or calender equipment, and decided to liquidate. The bead, finishing, airbag, and tube departments on the first floor have been converted into a cutting and preparatory department for footwear. The tire making room is being occupied by the gaiter quarter department, and the curing room will accommodate the new pressure cure vulcanizer, which will be installed this month.

Hood Rubber Earnings

For the first six months of its fiscal year, April 1 to September 30, the Hood Rubber Co., Watertown, Massachusetts, has earned approximately $225,000. This amount represents a surplus after all charges and preferred dividend payments.

New Jersey

The rubber manufacturing industry in the state of New Jersey has enjoyed fairly good business during the past month. Trenton tire plants are running normal with prospects of more activity before the winter sets in. The hard rubber situation is beginning to improve a little after a dull summer season, but manufacturers say the orders are not as large as could be expected. The output of mechanical rubber goods remains fair although there is no decrease in the volume of heels and soles being produced.

The Rubber Manufacturers' Association of New Jersey will hold its annual meeting early in December in the Stacy-Trent Hotel, Trenton, New Jersey, when officers will be elected and other business transacted.

The Murray Rubber Co., Trenton, New Jersey, was recently compelled to close down for a few days because of a freshet in the Assunpink Creek, which flows past the plant. The lower floor of the factory was flooded and some stock ruined.

William J. B. Stokes, Horace T. Cook, Clifford H. Oakley, Bruce Bedford, Horace B. Tobin and Charles E. Stokes, prominent Trenton rubber manufacturers, served as members of the committee to raise $400,000 toward the $1,000,000 Soldiers' and Sailors' Monument to be erected in Trenton. The manufacturers also contributed large sums toward the project. General C. Edward Murray, president of the Crescent Insulated Wire & Cable Co., contributed $5,000.

Joseph Stokes Rubber Co., Trenton, New Jersey, announces that business is not up to normal at the present time, and that some of the employes have been laid off through lack of orders.

John T. Spicer, formerly general sales manager of the Thermoid Rubber Co., Trenton, New Jersey, has been made manager of the general automotive division of the Johns-Manville Corp., Manville, New Jersey. He was formerly manager of the automobile replacement sales for the Johns-Manville concern.

Milton H. Martindell, secretary of the Joseph Stokes Rubber Co., Trenton, New Jersey, recently returned from a vacation in the far west.

William A. Howell, superintendent of Whitehead Brothers Rubber Co., Trenton, New Jersey, who was ill in Mercer Hospital, Trenton, for several days, is now much improved. Mr. Howell has been connected with the Whitehead company for many years.

E. A. Van Valkenburgh has resigned as chief chemist of the Ajax Rubber Co., Trenton, New Jersey, and has accepted a similar position with the Tasco Asphalt Co., Newark, New Jersey.

The Hamilton Rubber Co., Trenton, New Jersey, announces that the sales office of the Victor-Springfield division, Fisk Building, New York, N. Y., has been consolidated with the home office at Trenton, New Jersey.

The Luzerne Rubber Co., Trenton, New Jersey, reports that business is a little better than last month but not up to normal.

The Puritan Rubber Co., Trenton, New Jersey, states that business is so good that the company has been unable to fill orders. Machinery has been installed and a new addition is contemplated to increase the output.

A. H. Massey, general sales manager of the Combination Rubber Manufacturing Co., has returned from an extensive business trip through the west. He reports good business and is optimistic over the future.

Frank W. Servis, Trenton, New Jersey, has resigned from the Colvin-Servis, Inc., Rahway, New Jersey, and the business is now being carried on by Mr. Colvin. The company is engaged in retreading tires. Mr. Servis was formerly general sales manager of the Combination Rubber Co., Trenton, New Jersey, while Mr. Colvin was production manager of the same company.

The Eagle Tire Co., Trenton, New Jersey, has leased two large properties on South Warren street, and will erect a plant for the sale of Firestone tires and tubes.

The Manhattan Rubber Manufacturing Co., Passaic, New Jersey, has made Howard A. Herty advertising manager. He has been with the company fourteen years and was recently assistant branch manager of the Boston office.

The Carrier Engineering Corp., 750 Frelinghuysen avenue, Newark, New Jersey, specialists in air conditioning and drying equipment which finds wide application in the rubber and other manufacturing industries, will be represented at the Sixth National Exposition of Power and Mechanical Engineering at Grand Central Palace, New York, N. Y., December 5 to 10, 1927. In their exhibit will be included refrigeration and conditioning and drying units for industrial and other purposes.

Stricken Returning from Football Game

While on his way home from a football game at Princeton, New Jersey, November 5, 1927, Harvey R. Nason, secretary and purchasing agent of the Murray Rubber Co., was suddenly stricken ill. He was rushed to the Mercer Hospital, Trenton, where physicians pronounced him dead.

Harvey R. Nason

Born in Hampton, New Jersey, November 22, 1869, he graduated from the Hampton High School, later attending the Rider's Business College, which course he completed in 1889. His first position was with the American Bridge Co., where he remained for two years, leaving there to go to the Eastern Rubber Co. His next connection was with the Empire Rubber Co., in the sales department, until 1917, when he became secretary and purchasing agent of the Empire Tire & Rubber Corp., successors to the Empire Rubber Co. In 1922, the Murray Rubber Co. was organized, and Mr. Nason retained the same position he held with the former companies.

EIGHT-HOUR LAW FOR WOMEN

The law limiting the hours of labor of women to eight hours a day or forty-eight hours a week, enacted by the 1927 New York State Legislature, will become operative on January 1, 1928. Any violation of this law, or those governing the employment of minors, will subject the employer to severe penalties.

J. NEWTON GUNN, PRESIDENT OF THE Lincoln Highway Association and formerly president of the United States Tire Co., died late last month. The obituary will be published in our forthcoming issue.

A REPORT ISSUED BY THE MITSUBISHI Warehouse Co. places the value of rubber and rubber goods in warehouses in Japan at the end of July, 1927, at yen 1,581,000. An estimate of crude rubber stocks, based on this reported value of stocks, is 900 tons.

Southern

The Richmond Rubber Co., Richmond, Virginia, has been appointed a distributer for the Gillette Rubber Co., Eau Claire, Wisconsin.

Harry A. Short, 735 East Broadway, Louisville, Kentucky, recently changed to India tires and tubes. Mr. Short has been in the retail tire business for twelve years.

Texas Plant of Godfrey L. Cabot, Inc.

Work is progressing rapidly on the plant of Godfrey L. Cabot, Inc., at Skellytown, Texas. About 250 men are being employed by the Cabot company in their construction gang and it is expected that the plant will start operations early in December. By mid-winter it is believed that the plant will be producing over 25,000 pounds of carbon black daily.

Innovations in the plant include welded tables, the Duerr air separator, electric drive, belt and gravity conveying, and new types of packer and press. These improvements are expected to greatly improve the quality of the production and help lower the producing costs.

N. T. D. A. CONVENTION

The eighth annual convention of the National Tire Dealers' Association, held in Louisville, Kentucky, closed November 17 with the reelection of Colonel H. V. Eva as president, and a continuance in office of the majority of the associate directors. H. B. Harper was made first vice president; A. M. O'Leary, second vice president; Tom Barbee, secretary; and C. A. Dudley, treasurer.

Among the exhibitors to the shop equipment supplies display, held in connection with the convention, were S. Birkenstein & Sons, The Fisk Tire Co., and the Murray Rubber Co.

RUBBER FOR AMERICA IN THE EVENT OF WAR

In an interview in the current issue of a scientific monthly, Thomas A. Edison is reported with predicting a war against America by the European nations. Mr. Edison's prediction was made in connection with his research work in the production of rubber, which he is credited with saying had as its objective the discovery of a plant which will produce rubber quickly in America.

"Don't make any mistake about that war," said Mr. Edison. "It will come. We may run along for a good many years without it, but sooner or later the nations of Europe will combine against the United States. The first thing they will do will be to cut off our rubber supply."

Insurance for Employes

Free insurance is enjoyed by the employes of the several mills of the Bibb Manufacturing Co., Macon, Georgia, in amounts ranging from $300 to $1,000, according to length of service. The company has awarded the policies believing that it encourages efficient work.

RUBBER MAKERS CANNOT START WITHOUT tree milk, and now efficiency experts contend that they cannot finish very well without cow milk. They assert that 75 per cent of industrial accidents occur at the peak fatigue hours, 10 a. m. and 3 p. m., and that it is in such periods that production schedules go most awry. Three great nationally known plants in the midwest are said to have cut output let-up and casualties over 50 per cent and enhanced workers' health by serving a pint of milk twice daily in a 10-minute recess, half the cost being borne by the employes.

The Phoenix, Arizona, Branch of the United States Rubber Co.

Eastern

The Hartford Rubber Works, Hartford, Connecticut, a subsidiary of the United States Rubber Co., will close its Hartford plant from December 12 to January 3, to take inventory.

The Stamford Rubber Supply Co., Stamford, Connecticut, recently added six acres of adjoining land to the area of its factory, and plans to enlarge its manufacturing operations in the future.

Andrew Anderson will cover the eastern states including New England, for the Lambert Tire & Rubber Co., Akron, Ohio.

The Vulcanized Rubber Co., Morrisville, Pennsylvania, reports that business is improving in all departments and that orders are on the increase.

The Traveler Rubber Co., Bethlehem, Pennsylvania, which has been in receivership for more than a year was sold at auction November 3 under a court order. The plant including machinery and equipment had been appraised at $96,854.81 and the sale figure totaled $46,059.06. The Bethlehem National Bank, holders of a mortgage, purchased the land and buildings at approximately $22,000, the machinery and equipment being bid in by individual purchasers at approximately $24,000. The sale has been confirmed by the court. Howard T. Lehman of Bethlehem was trustee in bankruptcy. Bondholders and other preferred creditors have claims totaling approximately $42,000.

LUMINOUS BALLS FOR NIGHT GOLF

In an experiment with luminous golf balls, Millard J. Bloomer, of 240th street and Van Cortlandt Park East, New York, N. Y., drove eight balls from the first tee over the course. Four landed in the fairway and four in the bushes. It took the experimenter just six minutes to round them all up, the position of each ball easily ascertained because of the phosphorescence. The balls give a greenish-yellow glow and are treated with a composition devised by a scientist of Columbia University. The composition holds the light eight or ten minutes after it is exposed to the air, and it is the hope of Mr. Bloomer to discover a substance which will produce a more permanent glow and so make practical the playing of all-night golf.

RUBBER BOOT AND SHOE FACTORIES located in New England, eighteen in number, produce more than half of the nation's supply. The average in sales made in New England to the country's total is 23 per cent.

New York

Goodyear's India Rubber Selling Co., Inc., has rented for a term of years a five story basement and sub-basement structure of 134-136 Duane street, New York, N. Y., containing 26,000 square feet of floor space.

The Overman Cushion Tire Co., Inc., has leased for a long term a building at 38 Bethune street, New York, N. Y., now under course of construction. The building will be used as a service station.

The United States Rubber Co., New York, N. Y., has appointed W. F. Cairns manager of the Buffalo branch to succeed Arthur B. Fennell. Mr. Cairns was formerly manager of the Atlanta, Georgia, branch.

H. F. Tiedeman is no longer connected with Joosten & Janssen, of New York, N. Y., and Amsterdam, Holland.

E. A. Guinzburg will soon take possession of new offices on the twelfth floor of the beautiful new building now being erected at 245 Fifth avenue, New York, N. Y. The Guinzburg company is now located at 302 Fifth avenue and specializes in bathing caps, slippers, and other novelties.

General Cable Corp., formerly Safety Cable Co., 114 Liberty street, New York, N. Y., has acquired the property and assumed the obligations of the Dudlo Manufacturing Corp., Safety Cable Co., Baltimore Copper Mills, Rome Wire Co., and the Standard Underground Cable Co. The consolidation strengthens each of the constituent companies and affords resources insuring their successful operation. Business direction and operation of the Safety company remains unchanged.

Binney & Smith Scientific Staff

The personnel of the scientific staff of the Binney & Smith Co., New, York, N. Y., comprises the following chemists, physicists and technologists:

William B. Wiegand, is in general charge as chief of research.

Louis J. Venuto, assisted by John W. Snyder and Samuel C. Dixon, directs the chemical laboratory for the application of pure research and for problems requiring immediate solution.

Donald F. Cranor is in charge of the development division, for contact with the rubber trade and translation of research into rubber practice. An entire carbon black plant has been placed under his charge for the development of methods of production, standardization and control.

Harold A. Braendle, physicist and microscopist, as rubber engineer is in charge of a special rubber laboratory assisted by Henry C. Steffen.

The Binney & Smith Co. has recently announced its support of the Columbian Carbon Co. Fellowship at Mellen Institute where carbon black fundamentals are being studied from the physico-chemical view-point by Carl W. Sweitzer, under the general direction of W. B. Weigand.

Gminder Linnen Process

The United States and Canadian rights for the Gminder Linnen process are patented and controlled by the Gminder Textile Research Co., Inc., of New York City. Headquarters of the company are in care of R. J. Caldwell Co., Inc., 19 West 44 street, New York, N. Y.

Goodyear Relics

SOUVENIRS OF CHARLES GOODYEAR

In the New York offices of the United States Rubber Co. may be seen the case containing Goodyear relics here shown. They include two knives of Sheffield steel with hard rubber handles, a hard rubber tray of very fine workmanship, a tie pin of hard rubber, and two medallion frames.

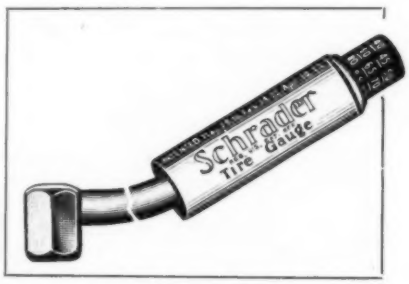
In the case also is a memorial medal, struck off by the Hamburg Rubber Co. of Hamburg, Germany, at the time of Goodyear's death, July 1, 1860.

Decline in U. S. Rubber Income

Earnings of the United States Rubber Co. for ten months ended October 31 were $5,100,000 after taxes and charges, a decrease of 30.1 per cent for the same period last year which reached $7,300,000. Gross sales amounted to about $177,000,000, a decrease of about $19,000,000, or 10 per cent, under last year. On tire sales alone the total of $40,500,000 shows a decline of $18,000,000, or more than 30 per cent.

BUS TIRE GAGE

A special new type bus tire gage has been perfected by A. Schrader's Son, Brooklyn, New York, built specifically for dual pneumatic tires with a six-inch extension. The tire may be tested easily without stretching through the hand hole in the disk and without crawling under the bus to reach the inside tire. It is built on the direct action principle, and has no delicate mechanisms to get out of order.



Balloon Tire Gage

CONSIGNMENT TIRE STOCKS

Leading overseas tire manufacturers find much to admire in American marketing methods, and doubtless they would gladly scrap many old trade practices if they could get cooperation. Objection is especially made to the retention of the old consignment stock system, which, by virtually financing retail dealers, usually carrying an assortment of makes, imposes a huge and unwarranted drain on capital resources. Illustrating the danger in such a method, it is stated that one British tire manufacturer, driven into bankruptcy by over-extension of credit to customers, had been found to have some $750,000 worth of tires out on consignment, although his total sales for the preceding year had been but $125,000. In the United States most dealers buy their tires outright, and, where they do not concentrate on one make, they usually limit their stock to but two or three makes of tires. Encouraged to specialize, they hustle for business and help much with publicity, instead of waiting for customers.

Midwest

The Gates Rubber Co., Denver, Colorado, gave to employes entitled to full participation under the profit sharing plan put in operation eight years ago, dividend checks amounting to 8.36 per cent on salaries for the past quarter.

The Bon-Dee Golf Ball Co. is starting the manufacture of golf balls with a modern factory located at 5626 McGraw avenue, Detroit, Michigan. In addition to golf balls, the company will refine balata and will be in a position to furnish deresinated balata and finished cover stock and cover molds.

The Hanford Produce Co., Sioux City, Iowa, operates two super-service stations. Arthur S. Hanford, Jr., and John Schunck, owners of the company were recent visitors to the India Tire & Rubber Co. at Akron, Ohio.

The Gates Rubber Co.'s export manager, Felix Nassimbene, spent the greater part of November on a business trip to the East, visiting the company's export warehouse at Jersey City and calling on export and commission houses as well as foreign distributers of the Gates products.

The Bibb Manufacturing Co., cotton spinner of Macon, Georgia, has moved its Chicago office from 186 North LaSalle street to 510 North Dearborn street. Alfred F. Brannan, H. H. Brannan and M. W. Rozar are associated with the Chicago sales offices of the company.

W. W. Burrell has been appointed manager of the southwestern district for Diamond-Brunswick, with headquarters in Kansas City. Until recently Mr. Burrell had been assistant manager, stationed at The B. F. Goodrich Co.'s offices in Akron, Ohio.

Cactus Rubber Project

Cactus Rubber Co. of America, capitalized at $500,000, has been organized and has received a permit from the California corporation commissioner to dispose of 20,050 shares, the proceeds of 10,000 shares to be used for financing the production and marketing of a rubber product from cactus developed by Dr. John C. Wichman, 601 South Grammercy place, Los Angeles, California, and who has transferred two patents held by him to the company. Officers include Dr. Wichman, Ernest T. Craig, John C. Reagan, Erwin P. Werner, and W. J. Bagby, Jr.

It is stated that the company owns one of the last available fields of spineless cactus in California and that plans are being considered for extensive plantings in that state and in Arizona. It is explained that a ton of the cactus will yield an average of 156 pounds of concentrated juice. This is said to be mixed with other ingredients, including a small quantity of Para rubber and linseed oil, and the composition is boiled and then reduced through evaporation. It is claimed that the resulting material can to some extent replace crude rubber in manufacturing rubber products.

SUBSTITUTE FOR RUBBER

Experiments are being made, according to the press, at the Edison laboratories in New Jersey on a substitute for rubber to be derived from the sap of trees which grow or can be grown in New England. It is said that over two hundred species of trees have been shipped from the Arnold Arboretum for these experiments. Financial backing, it is understood, is being given by Ford, Firestone and Edison.

EXPORTS OF RUBBER PRODUCTS FOR September, according to figures given by the Department of Commerce, declined to the lowest point since January, and fell slightly below the value for September, 1926.

ORNAMENTAL OVERSHOE

A protection for delicate hosiery and light, bright hued slippers for evening wear, Cap'n Kidd adds a note of color and piquancy to the toilette, which, however, does not detract from its real use and service. It is equally effective in stormy weather, the cuff at the top may be turned high around the leg defying the heaviest downfall of snow or rainfall. The shoe is light and flexible, and may be put on and adjusted in a very short time. It is especially suitable for children, keeping the legs and feet warm and dry in all sorts of weather. The manufacturer is the Cambridge Rubber Co., Cambridge, Massachusetts.

Cap'n Kidd

ACCORDING TO THE DEPARTMENT OF Commerce comparative tire exports, during the first nine months of 1927, reached the following grand totals: United States, 2,219,416; Canada, 1,292,894; United Kingdom, 718,454; France, 1,729,305.

The Gillette Rubber Co., Eau Claire, Wisconsin, sponsors the modern orchestra, shown herewith, which broadcasts daily programs through Station WTAQ. C. S. Van Gorden is advertising manager of the Gillette company and also director of the radio station.

Pacific Coast

Griffith Rubber Mills, long operated as the American Belting & Hose Co., of Portland, Oregon, is now located at 519-523 North 22d street, the change having been made necessary by a disastrous fire recently at the old plant, East Water and Yamhill streets. In the new and larger quarters much new equipment is being installed, and the company has ample space for expansion. It does a considerable business with the paper mills of the Northwest and British Columbia. Although given a serious setback by the fire, within two weeks "Grippo" non-slip pulleys were shipped to Longview, Seattle, and Spokane paper mills; and within three weeks large press rolls were recovered and shipped to paper mills at Camas, Washington; West Lynn, Oregon; Tumwater, Washington; and Powell River, British Columbia. Many of the mills supplied hitherto obtained rubber roll covering from eastern makers.

United States Rubber Co., according to Pacific Coast Division Manager J. B. Brady, stationed at San Francisco, has been faring very well in its far west territory. The volume of the division for the past ten months of 1927 has been much above the quota set, and the prospects for the remainder of the year are reported as very bright. Both in tonnage and dollar volume totals are considerably in excess of the corresponding period in 1926. Manager Brady says that the whole division is functioning perfectly and that the enthusiasm of the personnel compares well with the fine spirit of optimism he noted in the eastern organization during his recent trip to the Atlantic Coast.

The B. F. Goodrich Rubber Co.'s Pacific states sales conference recently held in Los Angeles afforded 101 branch and other representatives a chance to see the progress being made in building the new Goodrich factory, which is about half finished. The conferees were from Washington, Oregon, Idaho, Montana, Wyoming, Colorado, Utah, Arizona, California, and parts of North and South Dakota and Nebraska. The visitors were headed by L. A. McQueen, assistant general sales manager; George W. Sawin, pneumatic tire sales manager; and T. A. Aspell, manager of truck and bus tire department, all of Akron, with H. M. Bacon, of San Francisco, Pacific Coast division manager. F. L. Hockensmith, Los Angeles branch manager, acted as host. Sales plans and policies were discussed and a comprehensive programme was outlined for 1928. An important Goodrich event also has been the arrival in Los Angeles of Samuel B. Robertson, who has been chosen as vice president and general manager of the new Pacific Goodrich Rubber Co., which will operate the Los Angeles factory. He will make his home in the Southwest. Since Mr. Robertson's arrival work on the new plant has been much speeded up.

Herbert N. Wayne, 514 Alta street, Santa Monica, California, inventor of the Wayne insulated cord fabric machine, is developing an improved machine which, instead of producing short lengths, will yield the fabric in continuous strips. Use of the original machine was recently licensed to the Pomona Tire Co., managed by J. B. Grubb, Locust and Third streets, Pomona, California, which reports its tire production as having been doubled within a month. In the Wayne device each cord is run through a rubber tubing machine and while coated with warm, plastic rubber is wound upon a drum until it forms a sheet, and it becomes a ply of tire-building fabric when cut spirally from the drum.

Los Angeles Chamber of Commerce statistics give the total output of rubber goods for the city in 1926 as $36,895,500, or about $2,500,000 over that of 1925.

American Rubber Manufacturing Co., Emeryville, near Oakland, California, has been producing lately the largest volume of hose, heavy belting, and mechanicals in its history, according to Treasurer J. L. Dodge. Recent installation of much up-to-date machinery has greatly expedited production. The company has established a branch office in the Title Insurance Building, Fifth and Spring streets, Los Angeles, and will maintain a warehouse at 1855 Industrial street in that city.

Burrow Manufacturing Co., East 111 Sprague avenue, Spokane, Washington, manufacturer of the Rocky Mountain tire boot, is enjoying a good trade in boots, skived cord reinforcements, tire reliners, patches, and repair materials, according to President-Manager James H. Burrow. C. C. McSpadden is vice president; O. S. Riggs, trustee, has taken the place of F. H. Fuller as secretary; and A. I. Butler has been elected one of the trustees, acting with J. D. Morissey.

Hood Rubber Co., Pacific Coast branch manager, A. J. O'Connor, recently attended a conference with the company executives at Boston. Mr. O'Connor is stationed at Hood Rubber Products Co., headquarters, 585 Howard street, San Francisco. Coast trade in tires, tubes, battery boxes, etc., is reported excellent.

Durable Mat Co., Inc., 2926 Sixteenth avenue, S. W., Seattle, Washington, has been doing exceptionally well, the volume of orders for October being nearly 50 per cent larger than for any preceding month. The United States Navy has put the company's products on the approved and allowance list, and the bridges of many cruisers and destroyers on both the Pacific and Atlantic coasts have been equipped with Durable mats. A new use for the mats has been found in and around swimming pools and showers. The mats are made of sections of old, good-quality tires looped with heavy wire. The company has set up a factory at Victoria, British Columbia, which is now operating commercially under Canadian patents; and a plant in the Southwest has been under consideration. The officers are: President, Falcon Joslin; vice president, H. W. Bell; secretary-treasurer, Charles T. Lyons; and sales manager, Sam R. Israel.

General Tire Co.'s San Francisco branch manager, D. A. Kimball, has returned from a sales conference at Akron.

Dunlop Tire and Rubber Co.'s Pacific Coast Division Sales Manager, R. R. Fox, of San Francisco, recently attended a sales conference at the company's plant in Buffalo.

The B. F. Goodrich Rubber Co.'s Spokane branch has been placed in charge of Earl B. Smith of Los Angeles, who succeeds Adams Ferris, who has been promoted, being put in charge of the Minneapolis branch. Pacific Coast Division Manager H. M. Bacon has just completed a series of visits among the Northwestern branches.

Coast Tire & Rubber Co., Oakland, California, is extremely busy producing and shipping its new line of Ranger balloon and high pressure tires, according to Vice President Louis S. Budo. A special price and a lively advertising campaign have helped to force production to capacity limit. The company maintains exclusive factory branches at leading cities on the Coast, and produces a complete line of first grade tires and tubes.

Goodyear Tire & Rubber Co. had as a recent visitor at its Los Angeles plant Robert Metzler, general manager of the Goodyear Tyre & Rubber Co., Sidney, Australia, and who later attended a conference with heads of the parent company in Akron. It is stated that the Australian plant, which was started last February, has for the past two months been producing fully 1,000 tires a day, and that the prospects for a steady increase are excellent. Mr. Metzler states that the automobile trade is very lively in that region and that tire buyers are quite as exacting about quality and performance as Americans. The Goodyear plantations in Sumatra supply the rubber, while the cotton is sent from the

United States. The Los Angeles factory is working near full capacity on regular and dated orders. J. X. Kennelley, recently appointed advertising manager, returned November 12 from a conference in Akron.

Firestone Tire & Rubber Co. building operations on its 40-acre tract in Los Angeles will now begin to hum, it is stated, with the arrival from Akron of C. A. Myers, director of the company and head of engineering, to whom the laying out of the big plant has been wholly intrusted. The grounds bounded by Alameda street, Southern Pacific Railway, Manchester and Santa Fe avenues have been leveled and pending street improvements have been completed, and bids have been invited for foundation material and structural steel. Firestone tire sales in the Southwest territory have been well in excess of the quota set, according to Los Angeles Branch Manager R. J. Cope, who recently conducted a conference in Los Angeles attended by all the Firestone representatives in the Southwest. An equally favorable condition was noted throughout the remainder of the Far West territory by Pacific Coast Divisional Manager C. V. Jones of San Francisco.

Compression Inner Tube Co., organized at Tulsa, Oklahoma, and which had a factory at Burbank, California, was recently ordered by an Oklahoma court to reimburse stockholders to the extent of $436,000 for share subscriptions totaling $4,000,000. Most of the stock had been sold to 4,000 persons in the Southwest nearly eight years ago. Gross misuse of funds in promotion had been alleged in the stockholders' suit.

H. C. James, rubber planter, and one of the pioneers in his line in the Federated Malay States, has been visiting Pacific Coast cities en route to Victoria, British Columbia. Mr. James remarked that restriction has been a blessing in disguise to the American rubber industry in preventing plantations from reverting into jungles and in checking prices from mounting too high through lessened production and increased demand. He was confident that the Philippines would not produce much rubber because of the inadequate rainfall.

West American Rubber Co., 400 North Avenue 19, Los Angeles, California, has extended several of its departments and installed new equipment, including a large tubing machine for

Goodrich Sales Heads at Coast Conference

At a recent conference held on the Pacific Coast, sales heads of The B. F. Goodrich Co. had an opportunity of inspecting the new plant at Los Angeles, California, which on November 10, 1927, was about fifty per cent completed.

The illustration at the right shows a group of the visiting sales heads and, reading from left to right, is as follows: George A. Sawin, manager of automobile tire sales; L. A. McQueen, assistant general sales manager; T. A. Aspell, manager truck and bus tire department, all of the above from Akron, Ohio; and H. M. Bacon, district sales manager of the Pacific Coast, with headquarters at San Francisco.

In the illustration at the bottom of the page, Resident Construction Engineer Edward Barry is seen explaining to a group of the visitors, the work, construction and details of the new factory. The consensus of opinion, judging from the expression on the guests' faces, is that it is a good job, and Mr. Barry, no doubt, is the recipient of encomiums from the group, collectively and individually.

The conference was declared a complete success.

mechanical goods and a large calender. Among its chief products are oil field supplies, and it has just added a novel piston and a swabber for well apparatus.

Yaffe Tire Shoe Co., 2555 Chambers street, Los Angeles, California, one of the largest producers in its line on the Coast, is doubling the size of its factory to meet its increasing trade, which covers nearly all the Far West States, according to H. Yaffe, head of the concern.

Smith & Lindquist, 1322 South Grand avenue, Los Angeles, California, have been appointed distributers for the Gillette Rubber Co., Eau Claire, Wisconsin.

Frank C. Van Cleef, who recently resigned as secretary of The B. F. Goodrich Co., Akron, Ohio, plans to spend several months in California.

C. I. O'Neil, formerly manager of the Portland branch of the Mason Tire & Rubber Co., Akron, Ohio, has been placed in charge of the Portland Office.

TO HOLD TIRE CHAIN TAUT

A new type of chain adjuster has recently been devised by The Gates Rubber Co., Denver, Colorado, which will hold the chain taut and eliminate the disagreeable

Tire Chain Adjuster

noise of chain slap on the fenders and pavement, one of the chief disadvantages of the steel tire chain. The device is made of tough, elastic rubber and is provided with four hooks for attaching to the side chains. Installation is quite simple.

FOOTWEAR IMPORTS

During the month of September, 1927, 8,831 pairs of rubber boots and shoes, valued at $18,787, were imported into Canada. These all came from the U. S. The figures for September, 1926, were 3,302 pairs, valued at $7,082, indicating that a considerable increase has taken place. For the twelve months ended September, 1927, the totals were 88,322 pairs, valued at $158,247, as compared with 49,571 pairs, valued at $75,578, for the twelve months ended September, 1926.

Canada

Fall stocks of rubber footwear are now in dealers' hands and November business has been very good, owing to rain and slushy weather conditions. It is interesting to note that larrigan makers are now receiving keen competition from the rubber footwear manufacturers and the lumbermen's rubber has been making inroads on the larrigan business in recent years. An advance has been reported in friction tape and splicing compound, following a similar movement in the United States. The increase amounts to four cents per pound for friction tape and two cents per pound for splicing compound.

Hockey pucks are now in general demand, due to the early winter hockey season.

Goodyear Tire & Rubber Co. of Canada, New Toronto, Ontario, has started an addition to the present plant which will give the company 50,000 square feet of additional floor space. The company is working at capacity, and has sufficient orders to keep the factory operating for some time.

Coutlee-Muir Rubber Corp., Ltd., Montreal, Quebec, has been formed to manufacture, purchase, import, sell and deal in rubber and all its products.

Gregory Tire & Rubber 1926, Ltd., Port Coquitlam, British Columbia, recently entertained twenty-five members of the Printer's Section of the Canadian Manufacturers' Association. Luncheon was served, after which short talks were given by members of the executive staff of the rubber company.

Robert T. Brown, formerly manager of the technical service of Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, has been appointed development manager at the new English factory in Wolverhampton, England. Mr. Brown came to Canada in 1922 from Akron, Ohio, to take charge of the tire designing and was soon advanced to the position of technical manager.

Gutta Percha & Rubber Ltd., Toronto, Ontario, announces that Charles N. Larsen, formerly manager of the central division at Winnipeg, Manitoba, has been appointed general salesmanager with headquarters at Toronto. Mr. Larsen has been associated with the company since 1904, and has been stationed at Winnipeg for the past twelve years, eight of which he was manager of the central division, with jurisdiction over Fort William, Winnipeg, Regina and Saskatoon territories.

Dunlop Marathon trophy road races are being held in various points throughout Canada for trophies presented by the Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ontario.

Rubberset Co., Ltd., Toronto, Ontario, has moved its stock from the Sullivan street warehouse to 94 West Wellington street, where local shipping will be done. This will also be a district sales office.

Advertising Galoshes. The leading Canadian rubber manufacturers making rubber footwear are advertising in large sized space their various lines of high and low cut galoshes, which will go over in a big way this year.

The Falk Corp., Milwaukee, Wisconsin, announces that arrangements have been completed with William Kennedy & Sons, Ltd., Owen Sound, Ontario, to manufacture and sell Falk continuous tooth herringbone gears, herringbone speed reducers and flexible couplings in Canada. The Kennedy company has been doing business as founders and engineers in Canada for sixty years.

Dermot McEvoy, 5011 Dunbar street, Vancouver, British Columbia, is severing his connection with the Gutta Percha & Rubber, Ltd., which he joined in 1920. When the company undertook the manufacture of reinforced rubber flooring in Canada, Mr. McEvoy was elected to look after that product in the West, and when it was decided to abandon the making of it, that paricular branch of the staff was disbanded. Mr. McEvoy intends to take a short vacation before making any new connections.

HOT WATER BOTTLES FOR CHINESE FLAPPERS

A recent order for 60,000 small hot water bottles received by a large Canadian rubber factory, brought to light the latest fad among the Chinese flappers. During the cold weather, these miniature bottles are placed in the wide kimona sleeve to keep the hands warm.

RUBBER FOOTWEAR IN IRELAND

An increase in rubber footwear in the Irish Free State, particularly in men's knee and hip boots and women's and children's knee boots, has been noted. The value of imports in 1926 was $173,120 as against $125,259 in 1925 and $60,800 in 1924.

The Rubber Industry in Europe

Great Britain

The new restriction year which had been awaited with anxious expectancy has begun, and for the time being at least, no changes have been made in the regulations. However, it has been left to the Governments of Ceylon and Malaya to take steps to render the working of the scheme more efficient. They have also been asked what, if any, alterations should be made in the regulations now in force; in the event it is decided that any changes are necessary these will probably be made as from February 1, 1928. At the same time it is learned that the Malayan Legislative Council is already considering a bill providing that from February 2, 1928, the amount of rubber covered by export coupons may be exported only in the quarter for which the coupons are issued, and any unexported balance may only be shipped in the following quarter when the full amount for that quarter has been used up.

Malayan Assessments

Cables received from Malaya would indicate that assessments for the new restriction year will be on a lower basis, the chief differences between the new rules and those for last year being that no allowance is made for areas planted in 1923, that is four-year-old acreages will not be assessed as in former years; that the tapping system which is to serve as a basis for assessments, will allow six years for first bark renewal, nine for the second and twelve for subsequent renewals, as against six years and eight years respectively, in the year before. Of course, areas planted in 1920, 1921 and 1922 automatically come into consideration for higher assessments this year, but the holdings planted in 1922, will not be entitled to the higher scale unless 60 per cent of the trees or at least 75 trees per acre have a girth of 22 inches measured at 20 inches from the collar. No new maximum limitation appears to be imposed, and there seem to be no changes in allowances to small holders.

Rubber Optimism

Probably on account of the marked tendency by many to regard the rubber situation from an unduly gloomy point of view, it has been felt necessary to enlarge on the bright spots and so infuse some sorely needed optimism. At a recent meeting of Harrisons & Crosfield, Eric Miller reviewed the situation from an unusually cheerful angle. One of the many interesting things he had to say was in reference to the competition between Ford and the interests in the automobile industry opposed to him, which Mr. Miller thinks should result in still cheaper cars which would be within the reach of a still larger buying public, and would naturally be accompanied by a still greater demand for tires.

The *Financial Times* is also rather hopeful. There has been a decrease in stocks, it points out, likely to be followed by further decreases; measures are being devised to tighten restriction and demand for new crude rubber from America is expected to increase; the expectation, it may incidentally be remarked, is partly based on the mistaken idea that reclaimed rubber is becoming unpopular with manufacturers as well as the public. Finally, this same paper publishes as analysis of the rubber position prepared by a well-known firm of London rubber dealers, in which it is shown that the increase in stocks during 1927 has not been as heavy as is commonly believed. It seems that in the usual calculations, a number of important points have been overlooked. The increase in stocks over the first eight months of 1927 reported by the Rubber Association of America, for America, and amounting to 23,646 tons, is disregarded because of discrepancies. The American increase in stocks is really 9,694 tons, calculated as follows:

	Tons
Net arrivals officially reported for January 1—August 31, 1927	276,831
Deduct loss of moisture during transit	2,000
	274,831
Deduct consumption (R. A. A. figures)	265,137
Increase	9,694

This amount added to increase of London stocks of 19,214 tons, makes 28,908 tons. But further deductions of decreases in stocks in the East and stocks afloat, bring the final stock increase as 13,514 tons, instead of about 45,000 tons as is generally assumed.

Forecast for 1928

Even if restriction is not tightened, there will, according to the same authority, be a decrease of 31,576 tons in world supplies in 1928. Thus if the quota for the coming year averages 60 per cent this will be 7½ per cent less than the average quota of 67½ per cent for the restriction year just ended; this figured on combined standard production for Ceylon and Malaya of 407,588 tons, comes to 30,576 tons. Besides this there will be a decrease due to the fact that most of the unused coupons have been used up, there being only about 3,000 tons available for Ceylon and Malaya, against about 19,000 tons used up last year, a difference of 16,000 tons, which makes the total so far 46,576 tons. The present increase in stocks taken at roughly 15,000 tons must be deducted from this figure, leaving the net decrease in world's supplies at 31,576 tons. Of course if restriction is rendered more effective, the decrease may reach 50,000 to 60,000 tons.

Marking Imported Tires

The Standing Committee on the importation of tires and tubes has recommended that an Order-in-Council be issued providing that these imports be marked with an indication of origin both at the time of importation and when exposed for sale in the United Kingdom. The indication of origin should be molded in a conspicuous and easily legible manner in the walls of covers for pneumatic tires of motor vehicles and of solid and semi-solid tires; in the case of tubes, the marking should be indelibly stamped or printed in a conspicuous position. Carton wrappers or other containers in which the tires and tubes are imported, exposed for sale or sold are to be similarly indelibly marked with indication of origin. Tires of less than 1¼ inches diameter, that is for toys and baby carriages, are recommended to be exempt from this ruling.

Institution of Rubber Industry Meeting

At the fourth Annual Meeting of the London Section of the Institution of the Rubber Industry held October 12, at the Engineers' Club, the following committee was elected: C. Baster, Commercial India Rubber Manufacturing & Supply Co., Ltd.; C. H. Birkitt, Northern Polytechnic; J. H. Blake, Heinke & Co., Ltd.; F. H. Bunce, Charles Macintosh & Co., Ltd.; W. S. Davey, Imperial Institute; T. R. Dawson, Research Association of British Rubber Manufacturers; A. L. Fairbank, Henry Gardner & Co., Ltd.; E. P. Kay and S. C. Mote, both of India Rubber, Gutta Percha & Telegraph Works Co., Ltd.; J. H. Nichols, Siemens Bros. & Co., Ltd.; D. A. S. Porteous, Johnson & Phillips, Ltd.; H. Standring, E. R. Taylor, Tuck & Co., Ltd.; H. Thom, North British Rubber Co., Ltd.; H. F. Trevillion, Reliance Rubber Co., Ltd.; Geo. E. Watson, James Lyne Hancock, Ltd.

The chairman, vice-chairman and honorable secretary will be elected by the committee at their first meeting.

At the meeting held on October 12, Dr. O. de Vries read a paper on "Coagulation, Structure and Plasticity of Crude Rubber."

British Notes

A one-day rubber exhibition has been decided upon by the Institution of the Rubber Industry, to be held December 14, 1927, in Central Hall, Westminster. The idea is to get the utmost publicity for the rubber industry, particularly with Christmas shopping in view.

Colored rubber Wellingtons for women—beige, blonde, fawn, champagne, slate-grey, mauve, red and blue, besides black and tan—were featured at the Shoe and Leather Fair recently held in London.

The Dutch Selling Scheme for crude rubber will shortly be taken up for consideration in London, when the Dutch group sponsoring it will meet British growers and discuss the plan.

Hard rubber extensively used in conjunction with silver and other metal articles, like candlesticks, knives and forks, hand mirrors, tobacco jars, etc., was shown by Precious Metals Industries, Ltd., London, at the International Exhibition of Inventions, just held at Central Hall, Westminster.

Rubber deterioration was the subject recently of an inquiry by the *India Rubber Journal*, which questioned a small group of leading firms in this connection, as a result of several expressions of dissatisfaction lately heard with regard to the inner qualities of plantation rubber. The majority of the firms addressed had noted no such deterioration, but one Scandinavian firm and the Goodyear Tire & Rubber Co., Akron, Ohio, submitted figures which, in their cases, seem to indicate a falling off in tensile strength in certain grades.

The Goodyear Tire & Rubber Co.'s factory at Wolverhampton, England, will be put in full production of 2,000 tires a day as soon as possible after December 15. Fifty picked men from the Akron Goodyear Flying Squadron will go to Wolverhampton to assist in the opening operations.

Germany

An industrial revival is to be noted in Germany in almost all departments and latterly the rubber industry has also felt the improvement in conditions, the tire manufacturers in particular reporting increased business.

Synthetic rubber rumors are going the rounds again. Recently the German daily papers had much to say about the latest activities in this direction by the I. G. Farbenindustrie, A. G., Frankfurt-a-Main, a concern that largely occupies itself with discovering substitutes for raw materials which Germany requires, but does not herself produce. According to the sources mentioned, preliminary work in connection with the production of synthetic rubber has been practically completed. Inquiry was made of the firm in question regarding the truth of the report. The reply, however, was rather vague, so that it cannot be said with certainty that the firm is now working on synthetic rubber.

The Deutsche Kautschuk Gesellschaft was formed on October 7, at Gross-Hamburg. Dr. Bunz and Dr. Esch will take charge of the management of the local group of sixteen members. Meetings will be held once a month. At the Founders' Meeting, Dr. Esch read a paper on "New Rules for the Compounding of Rubber Mixtures."

The Phil. Penin Gummiwaaren-fabrik A. G., Leipzig-Plagwitz, has stopped payments. This firm, which specializes in surgical goods, has been in financial difficulties for some time. It may be remembered that the concern combined with the Leipziger-Gummiwaren-Fabrik A. G., vormals Julius Marx, Heine & Co., not long ago. The latter firm had also been experiencing bad times, and it had been hoped that the fusion would help both firms, which are old, well-respected houses, to regain their former position. But evidently circumstances were not in their favor, for, in spite of two attempts to rehabilitate the concern, the receivers may this time have to decide that the conditions are such as to make liquidation necessary.

Russia Buys Rubber in Hamburg

It is learned that the Soviet Commercial Agency in Germany has created several new purchasing departments to facilitate the buying of crude and manufactured wares for the Soviet Republic. Of special interest is the department for crude rubber, which in view of the importance of Hamburg in the crude rubber trade has been established in that city. Increased business at the Hamburg rubber exchange will therefore in future have to be considered in connection with the Soviet's purchases of rubber.

Poland's Rubber Consumption

Poland's consumption of crude rubber during 1926 fell considerably as compared with that for 1925. In the former period total imports came to 1,578 metric tons, and reexports to 256 tons, while in 1925 the amount of rubber entering the country was 2,320 metric tons, while reexports were only 99 metric tons.

Patent Tapping Process

Recent press reports have it that the Italian colonial engineer and rubber expert, Conte Bellini delle Stelle, has invented a new device by which the output from any given number of rubber trees can be increased six-fold, while only one out of eighty men usually working on a section need be retained. According to the inventor, this device has been tested and found successful. He intends to leave shortly for Brazil, where he will continue experiments with the device as well as with another. The invention is protected by French patent, and is to remain secret for the period of one year. It is claimed that the new system of extracting rubber from the trees is not injurious, which remains to be seen. Since its most important feature is the saving of labor, the invention, if it should prove to be all that it is claimed to be ought to solve the main difficulty that those anxious to undertake rubber growing in Brazil, Africa and the Philippines, have to meet.

Austria

In a report of the Austrian Textile Industry, the situation in the elastic goods branch is termed critical owing chiefly to a considerable falling off in the export trade. As compared with 1925, exports from Austria in 1926 show a decline of about 15 per cent, which in itself would not be very alarming were it not for the fact that in 1925 manufacturers had already been compelled to work at reduced capacity, since foreign trade in that year had dropped alarmingly. The totals for exports during 1924, 1925 and 1926 are given as 3,504 quintals, 1,392 quintals, and 1,177 quintals, respectively, and clearly indicate the enormous set-back in business.

At the same time imports show a slight decrease, but nothing in comparison to that of exports. Manufacturers are hard put to it at present as the home demand is entirely insufficient to make up the lessened demand from foreign countries. As a result of the unfavorable condition, firms are forced to specialize. Latterly, the difficulties of the manufacturers were added to by an untimely demand of increases of wages made by the workers. The wage war ended with a concession to labor's demands, which though considerably below what was asked, nevertheless adds to the cost of production.

The use of solid rubber tires is to be prohibited in the Municipality of Vienna. As from January 1, 1928, no vehicle with solid tires will be allowed to travel within the limits of the Vienna Municipality. All vehicles of up to three tons must be equipped with pneumatic tires. Trucks of over three tons may substitute the semi-pneumatic for the regular pneumatic tire.

The Rubber Trade in the Far East

Malaya

From a detailed review of Singapore's trade for the half year ended June 30, 1927, presented at a recent meeting of the Singapore Chamber of Commerce, some figures regarding the rubber industry have been selected. During the first half of 1926, Singapore imports of Para rubber were 100,389 tons value $160,350,421, while exports were 90,241 tons, value $194,021,133. The figures for the first half of 1927 were: imports, 117,481 tons, value $132,495,145, exports, 102,585 tons, valued at $146,540,423. The decline in value in conjunction with the increased amounts in tons during 1927 is marked, and is held to be chiefly responsible for the adverse balance shown for Singapore for the period under review.

Prices in January for standard sheet opened at 65½ cents, and closed in June at 60¾ cents, while in the interval the extremes of 72 cents and 59½ cents were touched. Total shipments from British Malaya for the first six months of 1927 were 196,860 tons as compared with 181,487 tons in 1926, an increase of 15,373 tons. On the other hand, here too a sharp drop in value is observed the declared value of the rubber being $108,500,000 below that for the first half of 1926.

Imports of rubber from countries outside of Malaya amounted to 87,418 tons, an increase of 21,140 tons over the preceding year.

How intimately the welfare of Malaya is connected with prosperity in the rubber industry is proved by the fact that owing to the drop in rubber prices a stagnation in business was observed which made itself pretty generally felt.

Large vs. Small Estates

Certain views on the desirability of large and powerful combines as a solution of many of the rubber industry's difficulties, have received rather widespread publicity both in England and in Malaya. The rubber industry, it was stated, includes a number of small companies which might be made to work more efficiently and more profitably if they were joined in large combines. For one thing there would be a considerable saving in overhead charges, agency fees, and similar costs. On the estate itself, there would be the advantage of expert management to say nothing of the extended facilities provided for experimentation in different departments by superior resources both as regards finance and reserve lands.

In a local paper, the matter is examined and it is claimed that amalgamations are not necessarily a blessing in themselves, that moderate sized estates may have the advantage of closer supervision and may be kept in better condition than a much larger one. The point is, what is one to consider as essential for the good condition of an estate. On a very big estate, meticulous care in details is out of the question, and probably not even desirable, but surely such works, to benefit the estate as terracing, to mention but one, could more readily be carried out on the extensive property of a strong combine than on a smaller estate with limited means at its command.

It is also shown that the greatest difficulty in the East is not the number or size of European estates, but the fact that at least half the amount of rubber produced locally comes from Asiatic estates conducted on entirely different principles from the European plantations. One would think that no better reason for amalgamation could have been offered than just this one. For if it comes to a situation where a stand on any issue must be made, and the differently conducted Asiatic holdings prove to be an obstacle (as is claimed they are now with regard to restriction), then surely a limited number of powerful combines would be better able to handle the matter than a far greater number of smaller estates.

Incidentally, this calls to mind the situation in the Dutch colonies, where we have an increasing number of native owners who are assuming unexpected importance in the industry, which is frankly regarded as a menace by many European planters who foresee that the producing end of the planting business may gradually pass into the hands of the natives. Surely, here is a case where strong combines are better fitted to handle the situation than numerous smaller unorganized units.

Malayan Enterprise

Several types of paving blocks came from this colony, among others the Cresson block which is doing so well locally and is soon to be tested in England as well. Quite a few estates took up the manufacture of crepe soles, mats and similar articles simple to make when the slump first made itself keenly felt. As matters improved, many of these estates discontinued the practice, but a few had worked out processes of their own and still continue to produce their specialties.

A concern that is claiming much attention here is the Wilkinson Process Rubber Co., which exploits a process said to give exceptional qualities to their products, particularly with regard to tropical conditions and wearing qualities. Mats, sole rubber and rubber liners for use in mines are the chief products. The company quite recently received a cabled order from South Africa for 4,050 square feet of reinforced Linatex launder linings, requiring tons of rubber to make, for a single mine on the Rand. The company grows some rubber itself, but a very great deal of the latex used in their process is supplied, in the latex form in which it is required, by native growers in the surrounding areas.

What many would like to see here is the establishment of factories to turn the crude material produced into manufactured goods right on the spot. The success of the Wilkinson concern indicates that there is a chance here for certain specialties chiefly those that do not require too much technical skill and the example of this firm may encourage still others. The firm's practice of obtaining latex from native growers, might well suggest other possibilities both to those that produce rubber for the crude rubber market and those that contemplate manufacturing.

Ceylon

The situation with regard to Ceylon rubber exports during 1927 has been examined by a well-known Ceylon dealer. He shows that on the present restriction basis, the exports of Ceylon for the whole of 1927, including rubber exported with unusued export rights, will be in the neighborhood of 55,443 tons. Thus, on standard production of 73,839 tons, the average exportable allowance of 67½ per cent for the restriction year, November, 1926-October, 1927, comes to 49,841 tons. For the calendar year 1927, the percentage allowable is 64⅓ per cent, which is 47,380 tons. Figures from the Rubber Controller indicate that up to August 31, 1927, the amount of rubber exported from Ceylon was 36,733 tons, which includes rubber covered by unusued coupons. These unused coupons constitute an uncertain element in calculations. According to official figures, 9,855 tons under unused export rights are still available, whether these will be used up by the end of the present year is very doubtful as it is estimated in some quarters that fully 60 per cent of these coupons are in the hands of small dealers who do not export rubber, while in addition in very many cases there are no estates and certainly no rubber to go against the coupons. Then, too, a number of coupons become defaced or get lost.

Taking all this into consideration, it is considered that not more than about 40 per cent of the coupons, representing 3,642 tons, will be used up by the end of the year.

Now adding this amount to the amount already exported so far, together with the exportable allowance for the remaining four months of the year working out at 14,768 tons, we get the total 55,143 tons, which is not far short of the figure 55,443 tons given above.

Standard Productions

The following figures show what Ceylon's standard productions have been for each of the five years during which restriction has been in force:

	Estates Over 10 Acres Tons	Estates Under 10 Acres Tons	Totals Tons
1922-23	56,317	3,717	60,034
1923-24	55,901	6,381	62,282
1924-25	58,979	6,827	65,807
1925-26	62,406	8,069	70,475
1926-27	64,245	9,594	73,839

It is worthy of note that the standard has been constantly increasing, particularly in the case of estates under ten acres, where with the exception of 1924-25, the percentage of increase as compared with that of the larger estates has been unduly large it would seem.

Uncouponed Rubber

The Rubber Traders' Association in Ceylon has repeatedly urged the necessity for regulations making the sale of unlicensed rubber, which is now perfectly within the law, illegal, except under special circumstances as when bona fide concerns require the rubber for making sole crepe, mats, or the like, locally. It now appears likely that the necessary regulations will be made, at least it is learned that the rubber controller has been considering the matter for the last two months. And it would seem to be high time that something was done. For at present large quantities of the unlicensed rubber are bought up for export purposes, and as no rubber can be exported without the necessary coupons, the rubber is shipped under coupons illegally bought.

The sale of coupons, it should be noted, is not permitted, which, however, does not prevent a widespread traffic in them, for many estates and small holdings are grossly over-assessed, particularly holdings under ten acres, and have plenty of coupons to spare which they dispose of for a few cents to those wishing to export unlicensed rubber.

The situation shows clearly enough how lamely restriction is functioning, if it does function at all, in Ceylon. On the one hand, we have estates heavily over-assessed, with coupons to cover much more rubber than they ever could produce, while on the other are estates, probably accurately assessed, which do not allow restriction rules to stand in the way of their producing to capacity and either selling their surplus rubber to local dealers, or buying coupons to cover this excess rubber and exporting it themselves. The sum total of all this is that as far as a good many estates, if not the majority, are concerned, restriction is non-existent.

The extent to which Ceylon is evidently over-assessed becomes quite clear when it is considered that throughout the five years of restriction, Ceylon has had a hard time to make up her quota (hence the excess of unused coupons), in spite of this juggling of coupons and unlicensed rubber. There are those that like to believe that Ceylon is holding back supplies for better prices and therefore falls behind the quota, but then how is one to explain the readiness with which coupons are offered for sale for a few cents?

Netherlands East Indies

Rubber exports from the Netherlands East Indies during the first half of 1927 came to 132,351 tons, including gross weights for native output. These figures represent an increase of 18,828 tons or 16.6 per cent over that for the same period of 1926. Other Netherlands East Indies, which chiefly exports native rubber accounted for the greater part of the increase, namely 14,513 tons, net weight. The increase from Java and Madura was 1,073 tons and from East Coast of Sumatra, 3,242 tons. The increase of native rubber during the current year is noteworthy as compared with the shipments of the year before which had shown a distinct tendency to drop and were rather under 1925 exports. Detailed figures, in long tons, follow:

	Tons
Java and Madura	28,825
East Coast Sumatra	36,817
Other Netherlands East Indies	
Atjeh and Dependencies	1,854
Riouw and Dependencies	5,519
Djambi	15,610
Palembang	10,524
Lampongs Districts	1,372
Benkoelen	39
West Coast Sumatra	797
Tapanoeli	3,866
Banka and Dependencies	1,192
Billiton	86
West Borneo	12,911
South and East Borneo	12,822
Menado	89
Amboina	24
Celebes and Dependencies	4
Total Other Netherlands East Indies	66,709
Grand Total Netherlands East Indies	132,351

Latex Contracts

Through the agency of the General Rubber Co. the United States Rubber Co. had concluded contracts for the supply of latex, for the spraying installations in Sumatra, with some estates. The supplies contracted were largely in excess of what the American company needed for their own needs, but it was expected that the surplus could easily be disposed to other manufacturers. Unfortunately, the use of latex in factories in America and elsewhere has not made the headway that was looked for at the outset, as a result the United States Rubber Co. finds itself with much more latex on its hands than it has any need for. Consequently The General Rubber Co., acting for the above-named company, is negotiating with the Amsterdam Rubber Co. and the Bandar Rubber Co., with a view to coming to some satisfactory arrangement regarding the latex, which these companies were under contract to supply. The Dutch firms are ready to treat with the General Rubber Co., provided the latter will accept the equivalent of the latex contracted for in the form of sheets, and that on such terms that this change will cause them no loss.

The Dutch companies, which had partly closed down their regular factories for producing sheet, will have to begin all over again. Besides this, they had gone to some expense in arranging for storing facilities for latex and for transportation. This equipment has now, of course, no value and the General Rubber Co. will be asked to make good these expenses incurred.

A. V. R. O. S. Report

The report of the director of the General Experiment Station of the A. V. R. O. S. (General Association of Rubber Producers East Coast Sumatra), for the year July 1, 1926-June 30, 1927 has just come to hand. Besides the general business affairs reports from the various scientific department are published. Hevea selection of course receives special attention, about 15 new mother trees have been selected from the artificial crossings successfully made in 1919 and 1920. From each of these trees a row of bud grafts has been planted, and it is expected that the experiment will yield good results. During the period March-May of this year a very large number of artificial crossings between some of the best trees on Soengei Pantjoer were undertaken, but with very indifferent success. Of 5,794 crossings made, only 93 gave good results.

With regard to disease, the report says that white root mold continues to be the most serious trouble that Hevea estates in Sumatra have to combat. This is particularly prevalent on certain red soils where the ground was not properly cleared of stumps, wood, etc., when the areas were first opened up, where the condition is considered to be serious. The number of dying trees is large. Moldy rot was chiefly observed in Bilah where some severe attacks were reported, and also in Tapanoeli. Of pests, termites were the worst, in fact the outbreak was characterized as astounding, and not only were young seedlings attacked, but even old Heveas were not spared.

Rubber Patents, Trade Marks and Designs

United States

October 11, 1927*

1,644,667 ELASTIC WEBBING. G. E. Clauss, assignor to The Ansonia O. & C. Co., both of Ansonia, Conn.

1,644,673 HOSE PROTECTOR. L. Gruner, Indianapolis, Ind.

1,644,683 SEAT. A. H. Leipert, assignor to International Motor Co., both of New York, N. Y.

1,644,816 ELASTIC WEBBING. G. E. Clauss, assignor to The Ansonia O. & C. Co., both of Ansonia, Conn.

1,644,835 TRUSS. R. H. Howard, Omaha, Nebr.

1,644,853 STORAGE BATTERY SEPARATOR. P. E. Norris, Wilkinsburg, assignor to The Westinghouse Union Battery Co., Swissvale, both in Pa.

1,644,855 SHOE TREAD. L. E. Packard, Brockton, assignor to Avon Sole Co., Avon, both in Mass.

1,645,089 TIRE. R. S. Burdette, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,645,187 HEEL. A. F. Ducheneau, Winslow, Me.

1,645,395 WHEEL TIRE. H. Nichols, New York, N. Y.

1,645,396 WHEEL TIRE. H. Nichols, New York, N. Y.

1,645,413 TIRE REPAIR SHIELD. J. H. Burrow, assignor to Burrow Mfg. Co., both of Spokane, Wash.

1,645,446 STEERING WHEEL. C. P. Nellis and A. W. Scott, assignors to The Inland Mfg. Co., all of Dayton, O.

1,645,478 HAT HOLDER. J. H. Gibson, Brooklyn, N. Y.

October 18, 1927*

1,645,620 TIRE WHEEL. R. J. Page, Ponsonby, Auckland, New Zealand.

1,645,702 TOY. E. Ischinger, East Rochester, N. Y.

1,645,921 RIM. W. J. P. Moore, New York, N. Y.

1,645,963 NIPPLE LOCK CLIP. F. S. Moore, Queens Village, N. Y.

1,646,112 STOPPLE. W. F. Schacht, Huntington, Ind.

1,646,122 TOY GUN MISSILE. W. A. Tidwell, Indianapolis, Ind.

1,646,164 TIRE ALARM. G. Moscate, Salamanca, N. Y.

1,646,191 TIRE FLAP. E. R. Dexter, Goshen, N. Y.

1,646,347 BALL. C. C. Collette, Amsterdam, N. Y.

October 25, 1927*

1,646,427 FLEXIBLE COUPLING. B. Skidmore, Jr., Chicago, Ill.

1,646,480 TIRE FILLER. A. J. Harpstrite, Los Angeles, Calif.

1,646,743 WINDSHIELD RUBBER. H. Bernard, Allentown, Pa., assignor to International Motor Co., New York, N. Y.

1,646,755 SPRING SUSPENSION. A. H. Leipert, assignor to International Motor Co., both of New York, N. Y.

1,646,800 TIRE. A. Valentini, Milan, Italy.

1,646,995 PLUMBING PLUG POST. W. J. Gagnon, assignor to The Bead Chain Mfg. Co., both of Bridgeport, Conn.

November 1, 1927*

1,647,205 TIRE. C. C. Wais, Cincinnati, assignor of one half to A. C. Wais, Wyoming, both in Ohio.

1,647,215 COLLAPSIBLE TUBE CLOSURE. L. J. Elsas, Atlanta, Ga.

1,647,319 WINDSHIELD WIPER. H. Shults, Gloversville, and A. W. Barbour and B. F. Barbour, Johnstown, both in N. Y.

1,647,401 TIRE PRESSURE MAINTAINER. G. C. Evans, Cranford, N. J.

1,647,428 MACHINE FOUNDATION. H. N. Atwood, Monson, assignor to Rubwood, Inc., Lawrence, both in Mass.

1,647,536 PENCIL HOLDER. T. W. Miller, assignor to The Faultless Rubber Co., both of Ashland, O.

1,647,751 SCRAPER. C. A. Schacht, Huntington, Ind.

1,647,871 TIRE. P. A. Lea, New Orleans, La.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

Dominion of Canada

October 11, 1927

274,498 TEAT CUP. J. Hopkirk, Cambridge, Auckland and G. W. Gane, Normanby, Taranaki, co-inventors, both in New Zealand.

October 18, 1927

274,711 TIRE BOOT. A. P. St. Aubin, Yakima, Wash., U. S. A.

October 25, 1927

274,843 WINDOW RUNWAY. H. W. Fauver, Detroit, Mich., U. S. A.

274,925 BALL. The P. Goldsmith Sons Co., assignee of H. Goldsmith, both of Cincinnati, O., and I. Tubbs, Superior, Wis., all in the U. S. A.

November 1, 1927

275,025 PIVOTAL JOINT. C. R. Little, Coventry, County of Warwick, England.

275,099 TIRE FLAP. The Goodyear Tire & Rubber Co., assignee of R. S. Burdette, both of Akron, O., U. S. A.

275,101 TIRE. The Goodyear Tire & Rubber Co., assignee of C. B. Orr, both of Akron, O., U. S. A.

275,109 TIRE. The Lambert Tire & Rubber Co., Barberton, assignee of F. A. Krusemark, Akron, both in Ohio, U. S. A.

275,110 TIRE. The Lambert Tire & Rubber Co., Barberton, assignee of F. A. Krusemark, Akron, both in Ohio, U. S. A.

275,111 TIRE. The Lambert Tire & Rubber Co., Barberton, assignee of F. A. Krusemark, Akron, both in Ohio, assignee of H. B. Whitlark, Tarboro, North Carolina, all in the U. S. A.

275,138 HEEL. The United Shoe Machinery Co. of Canada, Ltd., Montreal, Quebec, assignee of the Panther Rubber Mfg. Co., Stoughton, assignee of B. Ross, Chelsea, both in Mass., U. S. A.

United Kingdom

October 5, 1927

275,707 PAVING. C. B. Aked, Ivydene, Bolton Villas, Bradford.

275,803 ELECTRIC ACCUMULATOR LABEL. H. T. Laslett, 55 King St., Ramsgate, Kent.

275,844 MASSAGE APPARATUS. L. Stouffs, Clinique St. Marie, Nivelles, and H. Deleu, 9 Rue de l'Orme, Brussels, both in Belgium.

275,902 ARTIFICIAL FOOT. A. Kaletta, 6 Hersterbachstrasse, Klettenberg, Cologne, Germany.

275,934† GAS MASK. Naamlooze Vennootschap Vereenigde Nederlandsche Rubberfabrieken, Heveadorp, Gelderland, Holland.

275,940† GAS MASK. Naamlooze Vennootschap Vereenigde Nederlandsche Rubberfabrieken, Heveadorp, Gelderland, Holland.

October 12, 1927

276,057 AIR CUSHION. D. Moseley & Sons, Ltd., G. E. Bermingham and A. H. C. Randall, Chapel Field Works, Ardwick, Manchester.

276,113 STOPPER. W. Y. Lambert, 4 Prescott Place, Clapham, London.

276,162 HORSESHOE. G. W. Cobb, 3 Providence St., Earlsheaton, Dewsbury, Yorkshire.

276,178 LICENSE HOLDER. H. Panzetta, 14 Lynwood Road, Redhill, Surrey.

276,236 BATHING CAP. M. Hart, 405 Franklin Court, Vancouver, Wash. U. S. A.

276,304† TIRE WHEEL. Soc. Italiana Pirelli, Milan, Italy.

October 19, 1927

276,484 SUCTION DENTURES. J. Weiser, 165 Commercial Road, London.

276,499 HOSE. F. Reddaway & Co., Cheltenham St., and J. Muskett, 42 Delamere Ave., both in Pendleton, Lancashire.

276,592 OVERSHOE. L. G. A. Stibe, and Helsingborgs Gummifabriks Aktiebolaget, Helsingborg, Sweden.

October 26, 1927

276,684† DOOR FINGER GUARDS. G. Kemmann, 46 Taubenstrasse, Berlin, Germany.

276,805 TRAFFIC GUIDES. Universal Rubber Paviors (Manchester 1923), Ltd., and L. Gaisman, Canning St., Audenshaw, near Manchester.

276,908 GAITER. J. Szeremi, 5 Károly körut, Budapest.

276,919 WIG SECURING DEVICE. L. Delsol (née Trumeau), 79 Rue des Couronnes, Paris, France.

276,944† BALLOON. Radium-Gummiwerke, Dellbruck, Cologne, Germany.

276,950† PLANTING MACHINE BAND. P. Bacie, La Pommeraie, Pouzanges, Vendee, France.

† Not yet accepted.

Chemical patents will be found on page 72. Machinery and process patents will be found on pages 75-76.

New Zealand

September 8, 1927

57,433 CONDUCTOR. Liverpool Electric Cable Co., Ltd., Linacre Lane, Bootle, Liverpool, England.

58,956 MILKING MACHINE RUBBER MOUTHPIECE. C. P. Dinsen, Travsted pr. Jejsing, Denmark.

October 6, 1927

58,108 TIRE SLEEVE. A. Eddison, 723 High St., Kew, Victoria, Australia.

Germany

450,498 PNEUMATIC TIRE. Karl Honig, Schandau a. d. Elbe, and Erich Hippe, Prossen b. Schandau a. d. Elbe.

450,500 ELASTIC TIRE. Friedrich Schonhut, Spohrstrasse 12, Nurnberg.

450,783 INFLATABLE TOY. Belinde Werke A. G., Wandsbek.

Trade Marks

United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section (1) (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the later act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

October 11, 1927, Act of February 20, 1905

233,719 ALLIGATOR—waterproof cloth, etc. The Alligator Co., St. Louis, Mo.

233,720 ALLIGATOR—sheets, ground blankets, etc., made of waterproofed material. The Alligator Co., St. Louis, Mo.

233,811 ANODE—inner tubes for pneumatic tires. The B. F. Goodrich Co., New York, N. Y.

233,812 ANODEX—inner tubes for pneumatic tires. The B. F. Goodrich Co., New York, N. Y.

233,900 CHARM—sheeting. S. Blechman & Sons, Inc., New York, N. Y.

October 11, 1927, Act of March 19, 1920

233,984 Representation of a golf ball containing the words: "NASSAU," "THE BEST BALL," and "GOLF BALL"—golf balls. Edwards & Walker Co., Portland, Me.

October 18, 1927, Act of February 20, 1905

234,146 WAK-ON-AIR—heels. Non-Skid Balloon Heel Corp., Chicago, Ill.

234,158 Representation of a man dressed in street attire, an x-ray view of his back showing the position of the various parts of the body while engaged in walking—shoes of leather, rubber, skins, etc. Field & Flint Co., Boston and Brockton, both in Mass.

234,160 STACTON—waterproof coats and capes. Pearson Brothers, London, England.

234,165 Representation of a red tag associated with a line of green thread used in sewing on the tag—lace-on type of blowout boot or patch for automobile tires. 20th Century Manufacturing Co., Midlothian, Tex.

234,175 TRIPLE FEATURE—shoes of leather, fabric, rubber, etc. J. P. Smith Shoe Co., Chicago, Ill.

234,182 VULCALOCK — adhesive cement. The B. F. Goodrich Co., New York, N. Y.

234,190 LIBERTY—tire casings and inner tubes. The Mansfield Tire & Rubber Co., Mansfield, O.

October 18, 1927, Act of March 19, 1920

234,312 MICHIGAN—tires and tubes. Wolverine Rubber Co., Detroit, Mich.

October 25, 1927, Act of February 20, 1905

234,415 COMBO—roll roofing, building paper and composition shingles. H. H. Honigbaum, doing business as The Rubber Roofing Co., New York, N. Y.

234,444 FLEXO—plastic composition used as floor covering. The Rubber City Mfg. Co., Akron, O.

234,474 ANODEX—stationers' rubber bands. The B. F. Goodrich Co., New York, N. Y.

234,475 ANODE—stationers' rubber bands. The B. F. Goodrich Co., New York, N. Y.

October 25, 1927, Act of March 19, 1920

234,515 Oblong containing the words: "The Movable Arch Shoe"—arch support shoes made of leather, rubber, fabric, etc. The Dr. A. Reed Shoe Co., Inc., Los Angeles, Cal.

November 1, 1927, Act of February 20, 1905

234,537 Double triangle containing the words: "RUBBER SERVICE LABORATORIES" and "'RUSCO' SODIUM XANTHATE"—ore concentration and flotation agent in the nature of a chemical compound. The Rubber Service Laboratories Co., Akron, O.

234,545 Double triangle containing the words: "RUBBER SERVICE LABORATORIES" and "A-11"—compound used as a vulcanizing accelerator in the curing of rubber articles. The Rubber Service Laboratories Co., Akron, O.

234,546 Double triangle containing the words: "RUBBER SERVICE LABORATORIES" and "A-40"—compound used as a vulcanizing accelerator in the curing of rubber articles. The Rubber Service Laboratories Co., Akron, O.

234,547 Double triangle containing the words: "RUBBER SERVICE LABORATORIES" and "R. S. L. MOLD SOLUTION"—solution of chemical nature applied to molds to prevent sticking of molded articles to the mold. The Rubber Service Laboratories Co., Akron, O.

234,561 Fancy Square containing the words: "ONTITE SPLICING COMPOUND"; beneath the square an oblong containing the word: "ONTITE"—friction tape and splicing compound in the form of rubber tape used for covering and insulating electric wire. Leahy Electric Corp., New York, N. Y.

234,564 Green circle on one side of which is the word: "GREEN" and on the other side the word: "DOT"—garters. Blek Co., Mfgrs., Maplewood, Mo.

234,610 Shield containing the words: "VALUE-BUILT"—leather, rubber and fabric shoes. J. K. Orr Shoe Co., Atlanta, Ga.

234,652 Diamond containing the word: "SARCO"—mineral rubber and asphaltic insulating compounds for electrical purposes. Asphalt Products Co., Chicago, Ill.

234,670 COURIER—tires. The Firestone Tire & Rubber Co., Akron, O.

234,712 ANTI-COLIC—nipple shields and nipples for nursing bottles. Davol Rubber Co., Providence, R. I.

234,758 SEA SHELL—bathing caps. The B. F. Goodrich Co., New York, N. Y.

234,765 NAUGATEX—vests, coats, sport blouses, sport coats, etc. U. S. Rubber Co., New Brunswick, N. J., and New York, N. Y.

November 1, 1927, Act of March 19, 1920

234,777 BEDFORD—tires and tubes. Bedford Tire & Rubber Co., Bedford, Va.

Dominion of Canada

Registered

October 11, 1927

42,418 Word: "MILESTONE"—tires and tubes. The Menzies Tire Co., Toronto, Ontario.

42,429 Words: "TOBY PRODUCTS" on a circular shield which is held by a brownie-like figure, whose head appears just above the shield and whose legs show beneath the shield; the figure stands upon an oblong of inlaid flooring—sheeting, tires, heels, airbeds, belting, etc. L. C. Tobias Co., Ltd., Toronto, Ontario.

October 18, 1927

42,497 Word: "SAXON," and the representation of a knight on horseback—tires, tubes, casings, tire repair materials, etc. India Tire & Rubber Co., Mogadore, O., U. S. A.

October 25, 1927

42,524 Word: "SEALTITE"—repair material for use in repairing pneumatic tubes, hot water bottles, gloves, druggists' sundries, etc. Gutta Percha & Rubber, Ltd., Toronto, Ontario.

November 1, 1927

42,578 Blue colored band longitudinally arranged around the periphery of a red colored tire inner tube, as well as the words: "BLUE SEAL"—tire inner tubes. M. S. Hannon, Toronto, Ontario.

42,579 Yellow colored band longitudinally arranged around the periphery of a green colored tire inner tube, and the words: "GOLD SEAL"—tire inner tubes. M. S. Hannon, Toronto, Ontario.

42,580 Red colored band longitudinally arranged around the periphery of a dark tire inner tube, and the words: "RED SEAL"—tire inner tubes. M. S. Hannon, Toronto, Ontario.

United Kingdom

October 5, 1927

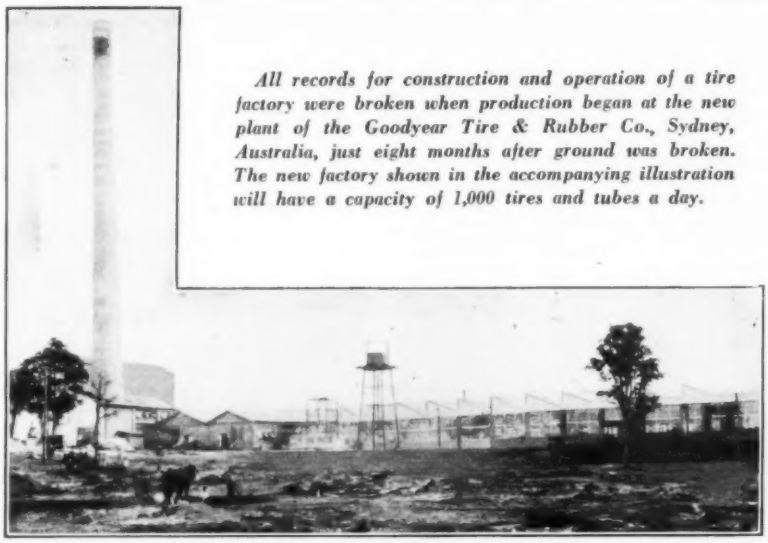
B481,100 Fancy circle containing the words: "EBERHARD FABER U. S. A." and "TEN-EIGHTY," also the numerals: "1080"—ink and pencil erasers. Eberhard Faber, Brooklyn, N. Y., U. S. A.

OCTOBER 12, 1927

473,122 "OVERTIME"—goods manufactured from rubber and gutta percha. J. R. Bowick, trading as Robie, Sons & Robie, 178, Foster Hill Road, Bedford.

481,156 "WILLIAM SHILLOCK" and "ALL ENGLAND"—football bladders. William Shillock, McGregor Works, Newton Row, Birmingham.

481,589 Double-headed arrow containing the word: "HOOD," through the center of which runs an arrow—boots and shoes. Hood Rubber Co., Watertown, Mass., U. S. A.



All records for construction and operation of a tire factory were broken when production began at the new plant of the Goodyear Tire & Rubber Co., Sydney, Australia, just eight months after ground was broken. The new factory shown in the accompanying illustration will have a capacity of 1,000 tires and tubes a day.

October 19, 1927

482,186 WIL-BE-FORT—raincoats, etc. Wilkinson, Bentley & Co., Horton Chambers, 15, Horton street, Halifax, Yorkshire.

October 26, 1927

B482,879 KEMPSHALL—tires and inner tubes. Dunlop Rubber Co., Ltd., Fort Dunlop, Erdington, Birmingham.

483,990 Representation of a railroad signal post and the words: "BELDAM PILOT" *and* "THE SIGN OF SAFETY"—engine and machine packings and jointings. The Beldam Packing & Rubber Co., Ltd., 16, Gracechurch St., London, E. C. 3.

New Zealand

September 22, 1927

25,632 Representation of a tree around which a snake is coiled, beneath the representation the word: "CONSTRICTOR"—tires, inner tubes, handlebar grips, etc. Leon Meredith, Nursery Lane Works, Nursery Lane, Forest Gate, London, England.

October 6, 1927

22,225 Circle superimposed across the front of which is a flag bearing the word: "BELDAM'S"—packings, hose, etc. The Beldam Packing & Rubber Co., Ltd., 29 Gracechurch St., London, E. C. 3, England.

Designs

United States

73,597 SHOE. Term 14 years. G. W. Blair, assignor to Mishawaka Rubber & Woolen Mfg. Co., both of Mishawaka, Ind.

73,630 TOY BALLOON NOVELTY. Term 7 years. A. D. Wismar, Bowling Green, assignor to Pelican Toy Co., Toledo, both in Ohio.

73,745 PNEUMATIC TIRE. Term 7 years. R. P. Johnson, Columbus, O.

Dominion of Canada

7,707 VENT CAP. J. A. Desmarteau Montreal, Quebec.

Germany

999,312 HEEL. Max Bottcher. Feldschlosschenstrasse 25, Dresden-A.

999,671 FLOATING CUSHION. Munden Hildesheimer Gummiwaaren-Fabriken, Gebr. Wetzell A. G. Hildesheim.

1,000,162 BUTTON. Sachsische Gummi- und Asbest-Gesellschaft m.b.H., (Thermesol Gummi-Fabrik), Radebeul bei Dresden.

1,000,178 HOUR GLASS WITH RUBBER SUCTION. Max Sillander, Pirna-Copitz.

1,000,218 TUBE FOR BICYCLES AND MOTORCYCLES. Wilhelm Thomas, Spenerstrasse 38, Dresden-A.

1,000,499 ANTI-SKID DEVICE FOR PNEUMATIC TIRES. Hugo v. Alten-Bockum, Berliner-Platz, 21, Breslau, III.

1,000,670 RUBBER UNDERLAY FOR CHAIR LEGS. Erich Muller, Wickerode, a.H.

1,001,149 NECK PROTECTOR FOR USE DURING HAIR CUTTING. Dr. Heinrich Traun & Sohne, vormals Harburger Gummi-Kamm Compagnie, Hamburg.

1,001,213 WATCH CASE. Firma Lick-Paramount, Ritterstrasse 70, Berlin, S. W. 68.

1,001,238 ROLL WITH EXTRA YIELDING SURFACE. Poppe & Co., Gieszen.

1,001,244 WATER CAN. Otto Schweisgut, Oberanger 47, Munich.

1,001,251 PNEUMATIC TIRE WITH DIVIDED AIR TUBE. Wilhelm Gartner, Osterhofen, Niederbay.

1,001,397 PRESSURE TUBE FOR AUTOMOBILE COVERS. Peter Muller, Witteringstrasse 19, Essen.

1,001,521 EXCHANGEABLE BELT. Guido Kretzschmar Crimmitschau i.S.

1,001,657 SHIRRED BAND FOR LADIES' GARTERS. H. Leon Schreyer, Gewerbeschulstrasse 34, Barmen.

1,002,111 INFLATABLE HOLLOW BODY. Gummiwaaren-Fabrik bei Melle Wortmann & C. Bosch, Melle, Hannover.

1,002,545 REMOVABLE HEEL. Freund's Barmer Fabriek-Depot, Amsterdam, Holland. Represented by F. Brackertz, Berlin S. W. 61.

1,003,243 EXCHANGEABLE HEEL. Richard Schoder, Senftenberg, N. L.

1,003,330 EXCHANGEABLE HEEL. Clemens Harbeke, Huckarderstrasse 329. Dortmund-Huckarde.

1,003,353 COVER FOR PNEUMATIC TIRES. Joseph Leu, Zurich, Switzerland. Represented by E. Goethe, Muhlstrasse 4, Stuttgart-Unterturkheim.

1,004,340 INNER TUBE. Wilhelm Rohrbeck, Residenzstrasse 33, Berlin-Reinickendorf-Ost.

1,004,491 HAIRDRESSER'S COLLAR. Theodor Feiszt, Morgenstrasse 12, Karlsruhe, i. B.

1,004,535 TILES. Franz Clouth Rheinische Gummiwarenfabrik A. G., Koln-Nippes.

1,004,725 SOLID TIRE. Karl Heise, Wolfen Kr. Bitterfeld.

1,004,753 FEEDING BOTTLE COVER. Rheinische Gummi-Gesellschaft W. Klotz & Co., Dusseldorf.

1,004,757 ABDOMINAL BINDER. Sophie Rabe nee Granhold, Brunnenstrasse 180, Berlin N. 54.

1,004,772 IODINE PENCIL. Selecta Arndt & Muller, Frankfurt a. M.

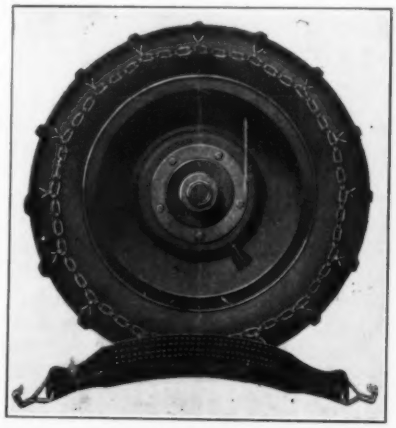
1,005,254 SPONGE RUBBER POWDER PUFF. Belinda G. m. b. H., Berlin S. W. 68.

1,005,780 POCKET WASHING BASIN. Paul Cramer, Eifelwall 32, Cologne.

1,006,157 OPERATING GLOVE. Medicinisches Warenhaus G. m. b. H., Frankfurt a. M.

NON-SKID DEVICE

A new non-skid device which will provide a maximum of safety wherever traction is treacherous, and hold a car on any icy-coated, hilly street, is being manufactured under contract by the Gillette Rubber Co., Eau Claire, Wisconsin, for Skid Grips, Inc., Chicago, Illinois. The grip may be attached at the beginning of the winter and left on for the entire season. Skid Grips are slightly curved and flexible and conform to any shape or tread. The construction provides a solid rubber cross link containing hundreds of sharp steel teeth. The tough, durable rubber base assures freedom from all clattering and rumbling, the projecting steel teeth, embedded so they can't come out, grip every road surface, effectually preventing skidding, side slippage or sliding.



Skid Grip

Legal Decisions

Customs Appraisers' Decisions

No. 4044. Protest 152021-G of L. Bamberger & Co. (New York). Rubber-proofed cotton wearing apparel classified at 35 per cent ad valorem under paragraph 919, tariff act of 1922, as wearing apparel in chief value of cotton, is claimed to be in chief value of rubber, dutiable at 25 per cent under paragraph 1439.

Opinion by J. Weller. The analyst in the appraiser's office reported rubber to be chief value in all of the cloth by a wide margin. The merchandise was therefore held dutiable at 25 per cent under paragraph 1439, as claimed.—*Treasury Decisions,* Volume 52, No. 16, page 12.

No. 4080. Protest 147710-G of Lewis & Conger (New York). Merchandise invoiced as india rubber sponge mats and classified as floor coverings not specially provided for under paragraph 1022, tariff act of 1922, is claimed dutiable under paragraph 1439 as manufactures in chief value of india rubber at 25 per cent.

Opinion by J. Weller. The mats are admittedly in chief value of rubber, however, the importer contended they should be regarded as bathing accessories, and not as floor coverings. It was found that whether the mats are used at certain times or remain on the floor permanently, their sole use is for covering the bathroom floor and that they are undoubtedly floor coverings. The protest was therefore overruled.—*Treasury Decisions,* Volume 52, No. 16, page 21.

No. 4098. Protest 122649-G of Julius Schmid, Inc. (New York). Small figures and bath mittens composed of sponge rubber, classified as toys at 70 per cent ad valorem under paragraph 1414, tariff act of 1922, are claimed dutiable at 25 per cent ad valorem under paragraph 1439 as manufactures of india rubber not specially provided for.

Opinion by J. Sullivan. In accordance with the appraiser's report and on the authority of United States *v.* Globe Overseas Corp., (13 Ct. Cust. Appls. 10; T. D. 40849), the merchandise was held dutiable at 25 per cent under paragraph 1439, as claimed. —*Treasury Decisions,* Volume 52, No. 17, page 38.

No. 4118. Protest 160511-G/73499 of International Forwarding Co. (Chicago). Negro heads and red and black devil faces classified as toys at 70 per cent ad valorem under paragraph 1414, tariff act of 1922, are claimed dutiable under various paragraphs at lower rates.

Opinion by J. Sullivan. It was held from the testimony that the merchandise in question was properly classified as toys at 70 per cent ad valorem under paragraph 1414. United States *v.* Strauss (13 Ct. Cust. Appls. 167; T. D. 41025) followed.—*Treasury Decisions,* Volume 52, No. 17, page 44.

No. 4182. Protests 135475-G, etc., of B. Altman & Co., Ltd. (New York). Rubber sponges, classified as toys at 70 per cent ad valorem under paragraph 1414, tariff act of 1922, are claimed dutiable at 25 per cent under paragraph 1439.

Opinion by J. Sullivan. It was established that the rubber sponges in question are identical with those the subject of G. A. 8867 (T. D. 40424), affirmed in United States *v.* Globe Overseas Corp., (13 Ct. Cust. Appls. 10; T. D. 40849). In accordance therewith the rubber sponges in question were held dutiable as manufactures of india rubber at 25 per cent under paragraph 1439 as claimed.—*Treasury Decisions,* Volume 52, No. 18, page 19.

No. 4219. Protest 216651-G of Keer, Maurer Co. (Philadelphia). Football and basketball bladders composed of india rubber, classified as "equipment" at 30 per cent ad valorem under paragraph 1402, tariff act of 1922, are claimed dutiable at 25 per cent under paragraph 1439.

Opinion by J. Sullivan. The football and basketball bladders in question are similar to those the subject of Abstract 1464, wherein football bladders were held dutiable as manufactures of india rubber at 25 per cent under paragraph 1439. The protest was therefore sustained.—*Treasury Decisions,* Volume 52, No. 18, page 27.

Drawback

(G) Clothing. T. D. 41315 (C) of January 18, 1926, providing for the allowance of drawback on rubber coated cloth, coats, capes, and outer garments, manufactured by the New York Mackintosh Clothing Co., Mamaroneck, New York, with the use of imported piece goods, is hereby amended by adding the following phase to paragraph 3, "less the quantity thereof which the value of the waste will replace," a recheck of the sworn statement of the manufacturer having developed that a valuable waste results from the manufacture of the exported products.

Letter of amendment addressed to the collector of customs, New York, N. Y., on October 17, 1927. (93859-5.) (Signed) Frank Dow, Acting Commissioner of Customs.—*Treasury Decisions,* Volume 52, No. 18, page 5.

Trade Marks

No. 1911. Decided March 7, 1927. Blek Co., *v.* Mishawaka Rubber & Woolen Manufacturing Co.

Appeal from concurrent decisions of the Patent Office, in a trade-mark interference proceeding, refusing registration to the appellant.

Long prior to the adoption by appellant of the mark consisting of the words "Red Dot" with a circular spot between, for use on men's, boys', children's and women's garters, appellee had widely used a similar mark on rubber boots, overshoes, woolen boots and socks. The Patent Office found, and we concur in the finding, that the use of deceptively similar marks on socks and garters would be likely to cause confusion in trade and mislead purchasers. Wolf & Sons *v.* Lord & Taylor, 41 App. D. C. 514. The decision is affirmed.—*Official Gazette,* Volume 363, page 214.

Trade Marks Canceled

182280. Pneumatic tires. The Victor Rubber Co., Maitland, Springfield, Ohio. Registered April 8, 1924. Canceled September 23, 1927.—*Official Gazette,* Volume 364, page 1.

Patents

The B. F. Goodrich Co. *v.* Closgard Wardrobe Co. Opposition 7,707.

The acting commissioner of patents affirmed the ruling of the trade mark interference examiner that wardrobe bags are goods of different descriptive properties from boots and overshoes made of rubber and fabric, hence the mark "Zipper" could be used. The patents for the so-called slide fastener have even expired, so that the public is entitled to use such fastener upon any and all goods to which it may be applied.

The decision of the examiner is affirmed.

COMMITTEE D-13 MEETS IN ATLANTA

Committee D-13 of the American Society for Testing Materials met in Atlanta, Georgia, October 20 and 21, 1927. One of the outstanding results was the appointment of a section of Sub-Committee XXI on Raw Cotton to investigate methods for determining tensile strength and length of fiber. This section consists of B. H. Foster, of the United States Rubber Co.; R. H. Adams, of Callaway Mills; O. G. Murphy, of the Shawmut Mill of the West Point Manufacturing Co.; H. H. Willis, of the U. S. Department of Agriculture, at Clemson, South Carolina, and Dr. R. W. Webb, U. S. Department of Agriculture, Washington, D. C.

Another significant activity is that being conducted by Sub-Committee XI on Knit Goods on new methods of testing the strength of knitted fabrics. The equipment considered consists of a steel plunger which pushes through the fabric. This test is a compromise between the grab and bursting test methods.

An important paper on International Textile Research was read by Dr. W. F. Edwards, chairman of Committee D-13, who discussed fundamental and industrial phases of the subject, citing typical examples of results.

Statistics Compiled from Questionnaire[1] Covering the Third Quarter of 1927

Reclaimed Rubber	Long Tons: Inventory at End of Quarter	Production	Shipments	Consumption
Reclaimers solely (6)	3,307	15,380	15,178	.....
Manufacturers who also reclaim (27)	8,495	24,069	8,390	18,906
Other manufacturers (67)	6,010	.....	.....	15,219
Totals	17,812	39,449	23,568	34,125

Scrap Rubber	Long Tons: Inventory at End of Quarter	Consumption of Manufacture Reclaimed	Due on Contract at End of Quarter
Reclaimers solely (6)	37,676	28,218	9,473
Manufacturers who also reclaim (19)	17,297	22,277	11,278
Other manufacturers (20)	574	.....	.....
Totals	55,547	50,495	20,751

Number of Tons of Crude Rubber Consumed in the Manufacture of Rubber Products and Total Sales Value of Shipments of Manufactured Rubber Products

Products: Tire and Tire Sundries	Number of Tons of Crude Rubber Used	Total Sales Value of Shipments of Manufactured Rubber Products
Automobile and motor truck pneumatic casings	53,409	$177,250,000
Automobile and motor truck pneumatic tubes	11,012	29,607,000
Motorcycle tires (casings and tubes)	108	610,000
Bicycle tires (single tubes, casings and tubes)	137	657,000
All other pneumatic casings and tubes not elsewhere specified	8	253,000
Solid and cushion tires	3,231	8,915,000
All other solid tires	95	215,000
Tire sundries and repair materials	1,369	5,981,000
Totals	69,369	$223,488,000

Products: Other Rubber Products	Number of Tons of Crude Rubber Used	Total Sales Value of Shipments of Manufactured Rubber Products
Mechanical rubber goods	4,010	$26,462,000
Boots and shoes	3,794	27,867,000
Insulated wire and insulating compounds	804	8,040,000
Druggists' sundries, medical, surgical and stationers' rubber goods	603	3,991,000
Waterproof cloth and clothing (except rubber sheetings)	1,143	8,153,000
Hard rubber goods	176	2,343,000
Heels and soles	963	5,102,000
Rubber flooring	220	1,133,000
Miscellaneous, not included in any of the above items	991	3,331,000
Totals	12,704	$86,422,000
Grand totals—all products	82,073	$309,910,000

Inventory of Crude Rubber in the United States and Afloat for United States Ports

On Hand	Long Tons: Plantation	Para	All Other	Totals
Manufacturers	69,206	2,227	1,556	72,989
Importers and dealers	15,529	1,676	667	17,872
Totals on hand	84,735	3,903	2,223	90,861
Afloat				
Manufacturers	6,846	7	122	6,975
Importers and dealers	28,169	716	146	29,031
Totals afloat	35,015	723	268	36,006

[1]Number of rubber manufacturers that reported data was 182; crude rubber importers and dealers, 43, reclaimers (solely), 6; total daily average number of employes on basis of third week of September, 1927, was 151,871.

It is estimated that the crude rubber consumption figures are *92 per cent of the total, and the crude rubber inventory 95 per cent of the total for the entire industry.

*Based on survey made by the Department of Commerce for the first six months of 1925.

Landings, Deliveries and Stocks in London and Liverpool as Returned by the Warehouses and Wharves During the Month of September, 1927

	Landed for Sept. Tons	Delivered for Sept. Tons	Stocked September 30: 1927 Tons	1926 Tons	1925 Tons
London					
Plantation	10,040	6,269	68,052	34,858	5,306
Other grades	23	49	120	154	19
Liverpool					
Plantation	†431	†507	†3,269	†1,450	†436
Total tons, London and Liverpool	10,494	6,825	71,441	36,462	5,761

† Official returns from the six recognized public warehouses.

United Kingdom Rubber Statistics

Imports

Unmanufactured Crude Rubber From—	September, 1927: Pounds	Value	Nine Months Ended September, 1927: Pounds	Value
Straits Settlements	10,907,100	£763,540	101,887,700	£7,993,340
Federated Malay States	6,353,700	439,318	48,982,200	3,819,290
British India	925,100	66,483	9,979,200	793,157
Ceylon and Dependencies	3,671,300	258,965	29,173,800	2,273,801
Other Dutch possessions in Indian Seas	2,967,000	208,494	20,170,200	1,580,647
Dutch East Indies (except other Dutch possessions in Indian Seas)	2,542,800	182,918	23,966,100	1,898,584
Other countries in East Indies and Pacific not elsewhere specified	177,700	12,815	2,167,300	166,343
Brazil	740,200	43,572	8,128,700	510,790
Peru	.....	.....	30,800	1,879
South and Central America (except Brazil and Peru)	400	25	162,700	11,922
West Africa:				
French West Africa	.....	.....	120,400	6,693
Gold Coast	44,500	2,836	450,400	31,154
Other parts of West Africa	202,400	13,643	1,267,600	93,122
East Africa, including Madagascar	184,800	12,919	1,172,200	88,359
Other countries	89,100	5,935	1,265,300	91,156
Totals	28,806,100	£2,011,463	248,924,600	£19,360,237
Waste and reclaimed rubber	449,700	6,607	5,199,200	80,856
Gutta percha and balata	322,200	29,040	3,900,300	349,164
Rubber substitutes	.....	.....	95,100	3,951
Totals	29,578,000	£2,047,110	258,119,200	£19,794,208
Manufactured				
*†‡Tires and tubes				
Pneumatic				
Outer covers	.....	£129,127	.....	£2,340,507
Inner tubes	.....	15,701	.....	291,158
Solid tires	.....	12,340	.....	142,949
Boots and shoes....*doz. pairs*	29,977	84,051	331,639	600,524
Other rubber manufactures	.....	137,479	.....	1,270,674
Totals	.....	£378,698	.....	£4,645,912

Exports

Unmanufactured				
Waste and reclaimed rubber	2,427,800	£22,635	20,618,900	£205,347
Rubber substitutes	46,800	1,019	492,200	11,491
Totals	2,474,600	£23,654	21,111,100	£216,838
Manufactured				
*‡Tires and tubes				
Pneumatic				
Outer covers	.....	£162,976	.....	£2,221,251
Inner tubes	.....	34,086	.....	470,778
Solid tires	.....	26,148	.....	266,580
Boots and shoes....*doz. pairs*	25,782	42,263	187,712	293,716
Other rubber manufactures	.....	245,148	.....	2,173,510
Totals	.....	£510,621	.....	£5,425,835

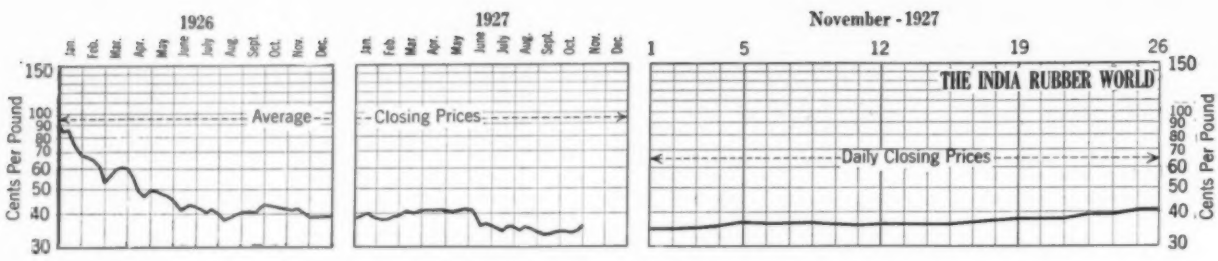
Exports—Colonial and Foreign

Unmanufactured Crude Rubber To—	September, 1927: Pounds	Value	Nine Months Ended September, 1927: Pounds	Value
Russia	1,159,200	£92,715	18,319,100	£1,693,589
Sweden, Norway and Denmark	257,400	22,971	1,740,400	159,197
Germany	2,639,300	201,989	22,508,100	1,811,010
Belgium	466,100	33,968	4,419,500	340,242
France	2,641,000	187,347	19,104,100	1,478,441
Spain	68,500	5,842	786,700	62,571
Italy	1,120,600	81,555	9,142,600	738,492
Other European countries	299,700	27,940	2,411,700	223,991
United States	2,580,600	194,855	52,530,200	4,111,811
Canada	4,800	360	40,700	3,696
Other countries	96,200	9,118	624,200	57,212
Totals	11,333,400	£858,660	131,627,300	£10,680,252
Waste and reclaimed rubber	11,700	371	260,900	7,388
Gutta percha and balata	73,100	6,908	476,200	45,545
Rubber substitutes	1,800	70	25,300	1,081
Totals	11,420,000	£866,009	132,389,700	£10,734,266
Manufactured				
*‡Tires and tubes				
Pneumatic				
Outer covers	.....	£48,674	.....	£380,475
Inner tubes	.....	11,119	.....	54,160
Solid tires	.....	1,334	.....	9,500
Boots and shoes...*doz. pairs*	713	1,584	10,548	23,097
Other rubber manufactures	.....	8,803	.....	80,300
Totals	.....	£71,514	.....	£547,532

* After April 12, 1927, tires and tubes imported or exported with complete vehicles or chassis, or fitted to wheels imported separately, are included under complete vehicles or parts.

† Motor cars, motorcycles, parts and accessories, liable to duty from Sept. 29, 1915, until Aug. 1, 1924, inclusive, and after July 1, 1925. Commercial vehicles, parts and accessories were exempt from duty until April 30, 1926, inclusive, and rubber tires and tubes until April 11, 1927, inclusive.

‡ Tires and tubes included prior to April 12, 1927.



Ratio Graph of New York Closing Prices of Spot Ribbed Smoked Sheets

Review of the Crude Rubber Market

New York Outside Market

THE November market experienced a steady rise in the price of ribbed smoked sheets during practically the entire month due to the increase of interest on the part of the factories and scarcity of offerings from the Far East. The general opinion is that the eastern markets are holding for higher prices. The fact that closer control of shipments is to be exercised under the restriction plan is given as the chief cause for the recent advance in rubber.

The week ended October 29 the market was very firm because of continual rumors of the tightening to be effected in the operation of the restriction plan. Little was done on the outside market except for small near by quantities. On October 24 ribs were 35¼ cents, buyers, 35½ cents, sellers.

The week closed November 5 gained activity as it progressed. Offers from the Far East became scarce and cables higher due to urgent short covering, resulting in a strong advance on the local market. Factories did not enter the market to any great extent and higher prices were expected with the development of factory buying. On November 5 ribs were 37 cents, buyers, 37½ cents, sellers.

The market of the week ended November 12 showed steady advances for the first three days, which were fairly well sustained the balance of the week. Prices ranged between 36⅜ and 36½ cents.

The week terminated November 19 developed much activity and strongly advancing prices, due to heavy buying in the Far East by the large factories. There was not much covering by factories in New York. Buyers' price on the 19th was 37¼ cents and sellers, 37⅜ cents.

On November 25 the price advanced to 40½ cents, buyers, 40¼ cents sellers. The sharp advance being attributed to the activity of factory buying because of their manufacturing needs.

Paras were firm with little offering. Balatas were quiet, but steady.

Importations of all grades in October were 31,310 tons, compared with 28,114 tons one year ago. Plantation arrivals for October were 29,758 tons compared with 25,872 tons one year ago. Total importations of plantation rubber for ten months ended October 31, were 341,185 tons compared with 316,847 tons for the corresponding period of 1926. Total importations of all grades of rubber for the ten months ended October 31 were 362,693 tons compared with 337,952 tons for the corresponding period of 1926.

RUBBER AFLOAT TO THE UNITED STATES

Week Ended	British Malaya	Ceylon	East Indies	London and Liverpool	Totals
October 29.....	2,903	858	1,208	810	5,779
November 5.....	4,902	611	2,850	938	9,301
November 12.....	2,956	631	1,593	1,032	6,212
November 19.....	4,579	651	1,051	451	6,732
November 26.....	4,014	779	1,588	1,945	8,326

London

Throughout the first four weeks of November the market opened quiet with prices firm and advancing. Sellers' price on November 1 was 17 pence and on the 25th it was 19¾ pence with the early trading steady. The market subsequently became irregular and sagged at the close.

Revised Assessments

The Rubber Growers' Association received from its local secretary in Kuala Lumpur the following abbreviated summary of the rules by which the committee responsible for assessments is to be guided in assessing standard production throughout Malaya as from November 1, 1927.

The following scale shall be adopted in assessing standard production: On area planted in 1922, 180 pounds per acre; planted in 1921, 240 pounds per acre; 1920 and previously, 300 pounds per acre; provided that (*a*) no area planted in 1922 shall be assessed unless assessment committee or district officer is satisfied that not less than 60 per cent of the trees, or alternatively, at least 75 trees per acre, measure not less than 22 inches circumference, 20 inches from the collar; (*b*) area burnt out or abandoned or otherwise unfit for tapping shall not be assessed; (*c*) if trees on holdings deemed to be incapable of producing amount of rubber allowed under scale by means of system of tapping, which complies with following standard, assessment committee or district officer may vary such scale.

New York Outside Market—Spot Closing Rubber Prices—Cents Per Pound

PLANTATIONS	October, 1927							November, 1927															
Sheet	24	25	26	27	28	29	31	1	2	3	4	5	7	*8	9	10	11	12	14	15	16	17	18	19
Ribbed smoked	34½	34⅞	34⅞	34⅞	35¼	35½	35¼	35¼	35¼	35⅜	36½	37⅛	36⅜	....	36¾	36¼	36	36¼	36¾	37⅛	37⅛	37	37⅝	38
Crepe																								
First latex	34⅝	35	35	35⅛	35½	35¾	35½	35⅜	35⅜	35⅝	36⅜	37⅛	37	....	36⅞	36⅜	36¼	36½	36⅝	37¼	37⅛	37¼	37⅞	38⅛
No. 2 blanket	30¾	31½	31¾	31⅝	31⅞	32	32⅛	32	32	32½	33¼	34	34⅛	....	34⅛	33½	33⅝	33¾	33¾	34⅜	34⅞	34¾	35¼	35½
No. 3 blanket	30½	31⅛	30⅞	31	31½	31⅝	31⅜	31½	31½	32	32⅞	33½	33⅞	....	33¾	33	33⅛	33½	33½	34¼	34½	34¼	34⅞	35⅛
No. 4 blanket	30	30⅝	30¼	30½	30⅞	30⅞	31¼	31	31⅛	31⅜	32¼	33⅛	33	....	33	32½	32¾	33¼	32⅞	33⅜	34	33¾	34⅜	34⅝
Thin clean brown	30½	31	30⅞	31½	31½	31⅝	31⅜	31½	31⅝	32	33	33⅜	34⅛	....	34	33	33¼	33¾	33⅜	34⅜	34½	34⅛	34¾	35⅛
Rolled brown	27⅛	28¼	28¼	28⅛	28¼	28⅜	28½	28⅝	28½	28¾	29⅜	30⅛	30	....	30	29½	29⅜	29⅞	36	36¼	36⅞	36⅜	37¼	37⅝
Off latex	34	34⅜	34⅜	34½	34¾	35⅛	35	34⅞	34¾	35	35⅜	36¾	36½	....	36½	35⅞	35¾	36	29¾	30½	30¾	30¾	31¾	31½

* Holiday.

Standard of tapping which shall be basis of assessment shall be system which: (*a*) Does not exceed equivalent of one cut on one-half of the circumference of the tree tapped on every third day, and (*b*) Permits minimum of (1) 6 years first renewal; (2) 9 years second renewal; (3) 12 years for subsequent renewal bark.

The estimated standard production for Malaya for the current restriction year ended October 31, 1927, is 340,000 tons, which includes the allowances for Singapore and Penang Islands.

The standard tapping system recognized hitherto has been one cut on a quarter daily or its equivalent, and the change in standard is therefore equivalent to a reduction of 16 2/3 per cent. In practice, however, the aggregate assessment for Malaya will probably not be reduced to the full extent of this percentage as rubber not yet fully mature is automatically entitled to an increased standard at each annual reassessment.

It will be noticed that this announcement says nothing about allowances to small holders, which probably means that these will not be effected. Market calculations put the possible reduction on "Standard" which will be brought about by these new regulations if strictly carried out, and after making allowance for automatic increases, at about 35,000 tons. On the basis of a 60 per cent exportable quota this would mean 21,000 tons less in actual shipments on a full year or 1,750 tons per month. It is not anticipated that the effect of the revised assessments will show itself in shipments for some months.

London stocks varied but a few hundred tons from week to week between October 31 and November 26. The weekly record is as follows: October 31, 69,551 tons; November 5, 69,660 tons; November 12, 69,501 tons; November 19, 69,850 tons; November 26, 67,318 tons.

Singapore

The crude rubber market in November was continuously steady and advancing. On November 1 ribs were 17 pence sellers and on the 25th were 20¼ pence.

World Rubber Production—Net Exports

	Long Tons—1927			
	July	August	September	October
British Malaya	11,250	13,266	17,740	14,045
Ceylon	4,018	5,357	4,911	5,245
India and Burma	827	688	479	.....
Sarawak	859	1,133	645	721
British Borneo	*500	*500	*500	.....
Siam	333	546	498	452
Java and Madura	4,771	4,355	3,635	.....
Sumatra East Coast	6,140	6,683	6,052	.....
Other D. E. Indies	11,663	12,054	10,059	.....
French Indo-China	519	716	497	775
Amazon Valley	1,713	2,004	2,474	2,704
Other America	95	.....	.....	.....
Mexican Guayule	399	348	463	.....
Africa	621	.....	.....	.....
Totals	43,708	.....	.....	.....

* Estimate.

Compiled by Rubber Division, Department of Commerce, Washington, D. C.

World Rubber Absorption—Net Imports

	Long Tons—1927		
	July	August	September
Australia	900	650	750
Belgium	436	604	552
Canada	2,104	2,013	1,850
Czechoslovakia	236	123	.....
Denmark	43	56	.....
Finland	43	38	123
France	2,384	2,795	1,956
Germany	2,946	3,119	2,891
Italy	1,007	1,274	.....
Japan	1,505	1,970	2,025
Netherlands	66	— 63	— 32
Norway	39	46	.....
Russia	415	386	518
Spain	177	138	.....
Sweden	102	172	183
United Kingdom	1,116	3,463	7,800
United States	35,720	31,001	28,704
United States (Guayule)	399	348	463
Totals	49,638	48,259	.....

— Minus quantity; excess of reexports over imports.

Compiled by Rubber Division, Department of Commerce, Washington, D. C.

New York Quotations

Following are the New York spot and future rubber quotations for one year ago, one month ago and November 26, the current date:

Plantation Hevea	November 24, 1926	October 25, 1927	November 26, 1927
Rubber latex (Hevea)...*gal.*	$1.50 @	$1.50 @	$1.50 @
CREPE			
First latex, spot	.38½ @	.34¾ @.35	.40½ @
December	.38½ @	.34¾ @.34⅞	.40½ @
January-March	.39 @	.35 @.35⅜	.41¾ @
April-June	.40 @	.35½ @.35¾	.42¼ @
Off latex, spot	.38 @	.34 @.34¼	.40 @
Amber No. 2, spot	.37½ @	.31 @.31¼	.38½ @
December	.37½ @	.31¼ @.31½	.38½ @
January-March	.38 @	.31¾ @	.39¾ @
April-June	.39 @	.32¼ @	.40¼ @
Amber No. 3, spot	.36½ @	.30½ @	.38 @
Brown, thin, clean	.36½ @	.30¼ @.30½	.38 @
Brown, specky	.36 @	.29 @.29½	.37 @
Brown, roll	.33 @	.27½ @.28	.34½ @
Sole crepe	.60 @	.58 @.60	@
Sheet			
Ribbed, smoked, spot	.38½ @	.34¼ @.34½	.40½ @
December	.38½ @	.34½ @.34¾	.40½ @
January-March	.39 @	.34¾ @.35¼	.41¾ @
April-June	.40 @	.35¼ @.35¾	.42¼ @
East Indian			
PONTIANAK			
Banjermassin	.15 @.17	.09 @.10	.09½ @.10
Pressed block	.26½ @.28	.15 @	.15 @
Sarawak	.15 @	.10 @	.09½ @
South American			
PARAS			
Upriver, fine	.34 @	.27¼ @	.33 @
Upriver, fine	*.46 @	*.37½ @	@
Upriver, medium	.30 @	.24½ @	.30 @
Upriver, coarse	.24½ @	.21½ @	.26 @
Upriver, coarse	*.36 @	*.30¾ @	@
Islands, fine	.28 @	.25 @	.29 @
Islands, fine	*.41 @	*.36 @	@
Acre, Bolivian, fine	.34½ @	.27¾ @	.33¼ @
Acre, Bolivian, fine	*.46 @	*.38 @	@
Beni, Bolivian	.34½ @	.28 @	.34 @
Madeira, fine	.34½ @	.27½ @	.34 @
Peruvian, fine	.33 @	@	@
Tapajos, fine	.31 @	@	@
CAUCHO			
Upper Caucho ball	.25 @	.22 @	.26 @
Upper Caucho ball	*.36 @	*.30½ @	@
Lower Caucho ball	.21 @	.20½ @	.24½ @
Maniçobas			
Ceará negro heads	.32 @	.22 @	†.25 @
Ceará scrap	.16 @	.12 @	†.16 @
Maniçoba, 30% guaranteed	.33 @	.22 @	.30 @
Mangabiera, thin sheet	.35 @	.22 @	.32 @
Centrals			
Central scrap	.20½ @	.20½ @	.26 @
Central wet sheet	.15 @	.14 @	.20 @
Corinto scrap	.28 @	.20½ @	.26 @
Esmeralda sausage	.20½ @	.20½ @	.26 @
Guayule			
Duro, washed and dried	.31½ @	.28 @	.31 @
Gutta Percha			
Gutta Siak	.31 @	.22 @	.21 @.21½
Gutta Soh	@	.38 @	.35 @
Red Macassar	2.90 @	2.90 @ 3.00	3.00 @3.50
Balata			
Block, Ciudad Boliver	.42 @.44	.48 @.50	.47 @.48
Colombia	.38 @.39	.39 @	.39 @
Manaos block	@	.50 @	.48 @.49
Panama	.39 @	.41 @	†.39 @
Surinam, sheet	.68 @.71	.58 @	.57 @
Amber	.70 @	.62 @.63	.60 @
Chicle			
Honduras	‡.56 @.60	‡.68 @	‡.68 @
Yucatan, fine	‡.56 @.60	‡.68 @	‡.68 @

* Washed and dried crepe. Shipment from Brazil.
† Nominal. ‡ Duty paid.

Low and High New York Spot Prices

	November		
PLANTATIONS	1927*	1926	1925
First latex crepe	$0.35¼ @ $0.37½	$0.37¼ @ $0.42	$0.99 @ $1.14
Smoked sheet, ribbed	.35⅛ @ .37⅜	.37¼ @ .42	.98 @ 1.13
PARAS			
Upriver, fine	.28 @ .32	.32 @ .38	.89 @ 1.03
Upriver, coarse	.21¼ @ .25	.22 @ .28½	.60 @ .76
Islands, fine	.26½ @ .28¾	.28 @ .34	.76 @ .89

* Figured to November 19, 1927.

The Rubber Exchange of New York, Inc.

Transactions on the Rubber Exchange between October 24 and November 25 inclusive, amounted to 18,594 contracts or 46,485 tons, compared with 8,470 contracts on 21,175 tons in the preceding monthly period. The high and low fluctuations of the market were greater than in the previous month, due to increasingly active trading conditions.

The press announcement about the middle of the month by the German dye trust in regard to the possibility of synthetic rubber competition with the natural product had no appreciable effect on the rubber market. Synthetic rubber is an old story to rubber chemists and its ultimate development as a commercial factor is still some years in the future. A supplementary German report sets the time as two years, at least, in the future. As yet American rubber manufacturers are practically without interest in the matter.

In the week ended October 29, trading gained considerable interest due to buying in the eastern markets and the general conviction that enforcement of the restriction enactment will be more effective and smuggling will practically cease.

November 5 terminated a week in which trading began with some hesitation and ended with good business in progress at prices advanced for all positions over those of the week before. The strength was attributable to actual factory demands from the more important rubber companies. Many of these are said to be uncovered as to a greater part of their requirements for future months. Primary markets continued very firm and made it difficult to transact business on bid prices.

The market of the week closed November 12 was strong with good buying on reactions. The belief is general that restriction will be applied to suit rubber producers' desires rather than to meet the rubber situation as a whole. The primary markets were firm and a moderate bullish sentiment developed.

During the week ended November 19 the market was very strong and active. It advanced about 60 points over the previous week's high. The Singapore and far eastern markets were very firm and active, some of the more important rubber manufacturing companies placing large orders for forward delivery.

Market trading of the week closed November 26 was very active and irregular with prices steadily advancing due to factory buying. Contracts traded in totaled 3,695 for the week. The tonnage transactions for the month to and including the 26th were 43,700 tons the largest in the history of the Exchange and compares with 15,000 tons for November, 1926. Arrivals of rubber this week were 29,000 tons, and the decline of London stocks is believed to be 2,000 tons.

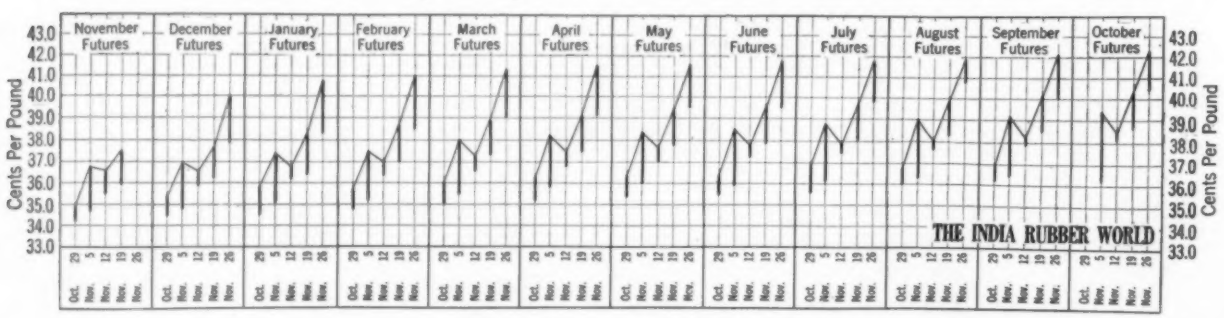
The range of prices from November 1 to November 25 were as follows:—

	High	Low
November	37.5	34.2
December	40.0	34.5
January	40.7	34.6
February	41.0	34.8
March	41.3	35.0
April	41.5	35.2
May	41.6	35.4
June	41.7	35.5
July	41.8	35.6
August	41.9	36.0
September	42.1	36.2
October	42.3	36.2

The following have been admitted to membership on the Rubber Exchange of New York: William C. Murphy of John L. Handy, Inc., New York, N. Y.; Edwin M. Lavino, of Lavino American & Asiatic Co., Philadelphia, Pennsylvania; and Harold L. Bache, of J. S. Bache & Co., New York, N. Y.

On November 16 the nominating committee of the Rubber Exchange Clearing House, Inc., named the following as candidates for the board of directors: Harold L. Bache, Robert L. Baird, H. Nicholas Edwards, John H. Hopkinson, Louis V. Keeler, Joseph Louis, W. A. Overton, Fred B. Peterson and Walter W. Price. The election will be held at the annual meeting of stockholders on December 1.

New York Rubber Exchange—High and Low Monthly Futures—Cents Per Pound



The Rubber Exchange of New York, Inc.

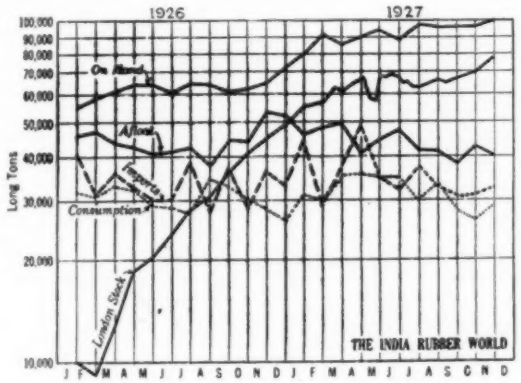
DAILY MARKET FUTURES—RIBBED SMOKED SHEETS—CLOSING PRICES—CENTS PER POUND

1927	October 24	25	26	27	28	29	31	November 1	2	3	4	5	7	8*	9	10	11	12	14	15	16	17	18	19	21	22	23	24*	25	26
October	34.3	34.4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nov'ber	34.2	34.6	34.6	34.6	34.9	35.1	34.7	34.7	34.8	35.2	35.8	36.8	36.6	...	36.5	35.9	35.5	35.8	35.9	36.7	36.9	36.7	37.2	37.5	37.6	38.2	39.0	...	...	...
Dec'ber	34.5	35.0	34.8	34.9	35.1	35.3	34.9	34.8	35.2	35.4	36.0	37.0	36.6	...	36.6	35.9	35.9	36.0	36.2	36.9	37.1	36.8	37.4	37.7	37.9	38.4	39.1	...	40.0	40.9
1928																														
January	34.6	35.0	35.8	35.0	35.4	35.6	35.1	35.1	35.3	35.6	36.3	37.4	36.7	...	36.8	36.2	36.2	36.4	36.7	37.5	37.6	37.3	37.8	38.3	38.3	39.0	39.7	...	40.7	41.6
Feb'ry	34.8	35.3	35.2	35.2	35.6	35.7	35.3	35.2	35.5	35.8	36.5	37.5	36.9	...	37.0	36.4	36.5	36.7	37.0	37.6	37.9	37.6	38.1	38.7	38.5	39.4	40.0	...	41.0	41.9
March	35.0	35.5	35.4	35.4	35.8	36.0	35.6	35.5	35.8	36.1	36.7	38.0	37.2	...	37.3	36.6	36.8	37.1	37.3	38.1	38.0	37.8	38.4	38.9	39.0	39.7	40.4	...	41.3	42.3
April	35.2	35.7	35.6	35.6	35.9	36.2	35.8	35.7	36.0	36.3	36.9	38.2	37.4	...	37.5	36.8	37.0	37.3	37.5	38.3	38.3	38.2	38.8	39.1	39.1	39.9	40.6	...	41.5	42.6
May	35.4	35.8	35.7	35.8	36.1	36.3	36.0	35.8	36.2	36.5	37.0	38.4	37.7	...	37.6	37.1	37.3	37.5	37.8	38.6	38.6	38.5	38.9	39.4	39.3	40.3	40.7	...	41.6	42.5
June	35.5	35.9	35.8	35.9	36.2	36.4	36.1	35.9	36.4	36.6	37.2	38.6	37.8	...	37.7	37.3	37.5	37.7	37.9	38.8	38.8	38.7	39.1	39.5	39.5	40.4	40.8	...	41.7	42.6
July	35.6	36.1	36.9	36.0	36.4	36.6	36.3	36.1	36.7	36.8	37.4	38.8	37.9	...	37.9	37.5	37.7	37.9	38.1	39.0	39.0	38.9	39.2	39.7	39.8	40.4	40.9	...	41.8	42.7
August	36.0	36.3	36.1	36.2	36.5	36.8	36.5	36.3	36.8	36.9	37.5	39.0	38.1	...	38.1	37.7	37.9	38.1	38.3	39.2	39.2	39.0	39.5	39.9	40.0	40.6	41.1	...	41.9	42.8
Sep'ber	36.2	36.5	36.3	36.4	36.7	37.0	36.7	36.5	37.0	37.1	37.7	39.2	38.3	...	38.3	37.9	38.1	38.3	38.5	39.4	39.4	39.1	39.7	40.2	40.0	40.8	41.2	...	42.1	42.9
Oct'ber	...	...	...	...	...	...	...	36.7	37.2	37.3	37.9	39.4	38.5	...	38.5	38.1	38.3	38.5	38.7	39.6	39.6	39.3	39.9	40.3	40.4	41.0	41.4	...	42.3	43.0

* Holiday.

Imports, Consumption and Stocks

The accompanying graph covers the crude rubber supply, consumption, and stocks for 1926 and the first eleven months of 1927. Stocks on hand in the United States decreased 377 tons to 97,452 on October 31. It is estimated that they will rise to 100,000 tons November 30 as tire manufacturing schedules were seasonally reduced the past month.



U. S. Imports, Consumption, Stocks, 1926-1927

Imports and consumption in November, 1927, are estimated respectively at 33,000 and 29,000 tons. London stocks between October 22 and November 19 declined about 200 tons only to 69,850 tons on the latter date.

UNITED STATES CRUDE RUBBER IMPORTS, CONSUMPTION AND STOCKS

			Stocks			
	Imports	Consumption	On Hand†	Afloat†	London	Singapore and Penang
1925	Tons	Tons	Tons	Tons	Tons	Tons†
Twelve months.	384,837	389,136	51,000*	48,000*	.....	.....
1926						
Twelve months.	411,900	358,415	72,510*	52,019*	.....	.....
1927						
January.....	45,736	31,500	76,171	45,218	54,786	26,443
February.....	29,446	29,000	76,000	48,000	56,962	26,766
March.....	39,500	36,100	91,086	49,597	63,167	27,844
April.....	48,700	35,900	92,800	39,000	67,034	24,543
May	36,569	34,590	94,600	44,200	56,668	25,133
June.....	33,194	33,800	89,250	47,233	64,486	21,898
July.....	38,667	29,219	98,469	40,587	63,626	18,674
August	33,068	33,460	96,148	40,937	64,842	21,764
September.....	32,798	27,214	97,829	37,966	68,519	25,178
October.....	31,310	26,791	97,452	42,804	69,660	25,790
Nov. 25 (est.).	33,000	29,000	100,000	40,000	69,850	.....

* December 31, 1925 and 1926.
† The first of each month.

Ceylon Rubber Exports

January 1 to September 7, 1927

	Tons
To United Kingdom	10,507.16
Continent	2,047.53
Australia	1,108.88
America	23,912.44
Egypt	7.00
Africa	74.27
India	17.80
Japan	137.58
Total	37,812.66
For the same period last year	37,344.78

ANNUAL EXPORTS 1921-1926

	Tons
For the year 1926	58,799.56
1925	45,697.19
1924	37,351.13
1923	37,111.88
1922	47,367.14
1921	40,210.31

ELIMINATE BORDERS ON RUBBER STAMPS

The Bureau of Reclamation, Department of the Interior, has announced that owing to the cost all unnecessary borders will be eliminated from rubber stamps purchased by the department. A border line, rectangular or circular, has been regarded as equivalent to four type lines, and has been charged for accordingly. Borders will not be approved unless their use is justified.

Reclaimed Rubber Market

The demand for reclaim continues at a steadily increasing volume. The recent pronounced upward trend in the prices of crude rubber has stimulated the commitment by rubber manufacturers for reclaim to meet their manufacturing requirements for the first quarter of 1928.

Research by reclaiming companies has resulted in establishing a number of tube reclaims of marked technical value particularly in mixings for compounded inner tubes because of their intrinsic value as regards good tensile and aging quality. The use of reclaim for third line non-guaranteed tires delivering adequate mileage to the consumer is substantial evidence of the technical reliability of reclaims for severe service.

Quotations remain unchanged from a month ago except in the cases of black selected and dark gray auto tire reclaims which have declined.

New York Quotations

November 26, 1927

	Specific Gravity	Price per Pound
Auto Tire		
Black	1.21	$0.08 @ $0.08¼
Black, washed	1.18	.10 @ .10¼
Black selected tires	1.20	.08½ @ .08¾
Dark gray	1.35	.10¾ @ .11
Light gray	1.38	.13 @ .13¼
White	1.40	.15 @ .15½
High Tensile		
Super-reclaim, No. 1 Black	1.20	.17½ @ .18
No. 2 Black	1.20	.14 @ .14½
High tensile red	1.20	.14 @ .14½
Shoe		
Unwashed	1.60	.08 @ .08¼
Washed	1.50	.10¼ @ .10¾
Tube		
No. 1	1.00	.17 @ .17½
No. 2	1.18	.13½ @ .14½
Miscellaneous		
Red	1.35	.14 @ .14½
Truck tire, heavy gravity	1.55	.07½ @ .07¾
Truck tire, light gravity	1.40	.08 @ .08¼
Mechanical blends	1.60	.07 @ .08

British Malaya

RUBBER EXPORTS

An official cablegram from Singapore to the Malay States Information Agency, 57 Charing Cross, London, S. W. 1, England, states that the amount of rubber exported from British Malaya during the month of October last totaled 29,846 tons. The amount of rubber imported was 15,801 tons of which 13,008 tons were declared as wet rubber. The following are comparative statistics:

	1926		1927	
	Gross Exports	Foreign Imports	Gross Exports	Foreign Imports
	Tons	Tons	Tons	Tons
January	30,452	10,237	34,946	14,995
February	30,440	8,306	27,528	11,697
March	35,012	14,800	41,346	17,462
April	23,727	10,565	29,041	13,069
May	31,231	10,604	31,393	15,491
June	30,624	11,764	32,607	14,706
July	28,824	15,280	23,947	12,697
August	34,625	13,595	30,371	17,105
September	35,913	13,972	29,835	12,095
October	39,367	15,203	29,846	15,801
Totals	320,215	124,326	310,860	145,118

Note—The above figures represent the totals compiled from declarations received up to the last day of the month for export from and import to all ports of British Malaya and not necessarily the actual quantity shipped or landed during that month.

DISTRIBUTION

The following is a comparative return of distribution of shipments during the months of September and October, 1927:

	September, 1927 Tons	October, 1927 Tons
United Kingdom	6,075	4,796
United States of America	16,926	19,831
Continent of Europe	4,318	2,974
British Possessions	709	662
Japan	1,793	1,574
Other foreign countries	14	9
Totals	29,835	29,846

The Market for Rubber Scrap

The rubber scrap business in November was active and the demand for inner tubes and tires was in large volume. Collections were correspondingly stimulated.

AIR BRAKE HOSE. Air brake hose is active at advances of $3 to $5 per ton over quotations of a month ago.

BOOTS AND SHOES. These are in better demand. The prices on all grades are unchanged except for black boots and shoes which have moved up ¼ of a cent.

INNER TUBES. These have advanced in price on all grades and continue in good demand supported by the activity in the reclaims derived from them.

MECHANICAL GOODS. The demand is fair. Quotations are mostly unchanged. Air brake hose was the only grade in the list advanced and regular soft hose the only one reduced.

TIRES. There is a good reclaiming demand for tires at prices mostly unchanged. Mixed and beadless are the only grades quoted higher than last month.

Quotations for Carload Lots

November 26, 1927

Boots and Shoes			
Boots and shoes, black	lb.	$0.01⅞ @	$0.02
Red and white	lb.	.01 @	.0115
Trimmed arctics, black	lb.	.00¾ @	.01
Untrimmed arctics	lb.	.00¾ @	.01
Tennis shoes and soles	lb.	.01 @	
Hard Rubber			
No. 1 hard rubber	lb.	.09½ @	.10
Battery jars, black compound	lb.	.01 @	.01½
Inner Tubes			
No. 1, floating	lb.	.07½ @	.07¾
No. 2, compounded	lb.	.05¼ @	.05½
Red	lb.	.06¼ @	.06½
Mixed tubes	lb.	.05¼ @	
Mechanicals			
Mixed black scrap	lb.	.00¾ @	.00⅞
Heels	lb.	.00½ @	.00⅝
Hose, air brake	ton	36.00	@40.00
regular soft	ton	17.00	
No. 1 red	lb.	.01¾ @	.01⅞
No. 2 red	lb.	.01 @	
White, druggists' sundries	lb.	.02½ @	.03
Mechanical	lb.	.01½ @	.01⅝
Tires			
Pneumatic Standard—			
Mixed auto tires with beads	ton	24.00	@25.00
Beadless	ton	33.00	@34.00
White auto tires with beads	ton	40.00	@42.00
Beadless	ton	50.00	@52.00
Mixed auto peelings	ton	32.00	@33.00
Solid—			
Mixed motor truck, clean	ton	25.00	@26.00

Plantation Rubber Exports from Malaya*

January 1 to September 30, 1927

	From Singapore Tons	From Penang Tons	From Malacca Tons
To United Kingdom	7,209.82	9,072.19	6,667.46
British Possessions	3,121.57	103.81	114.85
Continent of Europe	11,456.33	1,653.53	2,344.76
United States	117,330.50	21,170.12	8,888.72
Japan	9,456.22	1,969.50	1,939.20
Other Countries	76.24	.....	.....
Totals	148,650.68	33,969.15	19,954.99

* Excluding all foreign transhipment.

GOLF BALL CONFERENCE

Golf ball manufacturers held a conference October 26 at Cleveland, Ohio, authorized by the Federal Trade Commission, condemning the secret payment by golf ball manufacturers of yearly salaries to professional golfers, for playing exclusively the golf ball of a particular manufacturer or distributer. The payment of special prize money to professional golfers who win matches or tournaments, was also condemned.

Among the firms represented at the conference were: Dunlop Tire & Rubber Co., Huntingdon Manufacturing Co., A. G. Spalding & Bros., St. Mungo Manufacturing Co., United States Rubber Co., Worthington Ball Co., and Wilson-Western Sporting Goods Co.

United States Rubber Statistics

Imports of Crude and Manufactured Rubber

	August, 1927 Pounds	August, 1927 Value	Eight Months Ended August, 1927 Pounds	Eight Months Ended August, 1927 Value
UNMANUFACTURED—*Free*				
Crude rubber	73,494,573	$26,396,931	657,315,271	$242,788,078
Balata	47,106	16,663	704,539	255,115
Jelutong or Pontianak	1,865,419	262,742	11,810,102	1,765,582
Gutta percha	432,053	75,799	2,351,888	484,767
Guayule	779,500	186,937	7,240,736	1,739,327
Rubber scrap	1,519,590	61,417	13,945,087	622,517
Totals	78,138,241	$27,000,489	693,367,623	$247,655,386
Chicle *dutiable*	177,346	$81,841	7,949,536	$4,006,104
MANUFACTURED—*dutiable*				
Rubber belting	36,104	$31,468	408,911	$257,497
Rubber tires	718	5,756	2,949	46,529
Other manufactures of rubber	.....	101,315	.....	885,886
Totals	36,822	$138,539	411,860	$1,189,912

Exports of Foreign Merchandise

RUBBER AND MANUFACTURES				
Crude rubber	4,052,079	$1,382,768	37,271,709	$15,395,896
Balata	15,534	5,590	67,163	26,248
Gutta percha and rubber substitutes and scrap	4,550	936	99,540	14,618
Rubber manufactures	.....	19,722	.....	214,632
Totals	4,072,163	$1,409,016	37,438,412	$15,651,394

Exports of Domestic Merchandise

MANUFACTURED				
India Rubber				
Reclaimed	1,408,221	$110,858	13,439,813	$1,306,464
Scrap and old	2,489,049	132,052	18,998,485	1,152,700
Footwear				
Boots *pairs*	123,984	271,186	435,771	1,096,394
Shoes *pairs*	259,673	228,690	971,868	831,494
Canvas shoes with rubber soles *pairs*	268,301	186,237	3,416,310	2,312,834
Rubber water bottles and fountain syringes *number*	49,574	29,806	210,236	141,169
Rubber gloves *doz. pairs*	7,274	23,947	51,074	158,583
Other druggists' rubber sundries	.....	30,940	.....	300,826
Bathing caps *doz.*	12,149	30,628	141,307	295,969
Hard rubber goods				
Electrical hard rubber goods	108,217	23,252	771,576	187,296
Other hard rubber goods	.....	31,462	.....	265,292
Tires				
Casings, automobile *number*	233,107	3,085,005	1,905,751	24,378,578
Tubes, automobile *number*	167,060	363,339	1,130,199	2,386,133
Other casings and tubes *number*	7,133	27,198	39,231	121,610
Solid tires for automobiles and motor trucks *number*	9,700	239,068	71,184	2,134,633
Others	160,255	39,817	1,068,261	273,806
Tire accessories	.....	183,583	.....	1,234,397
Rubber and friction tape	143,504	37,847	1,046,694	304,905
Belting	394,026	197,729	3,208,082	1,697,920
Hose	625,008	232,744	4,946,500	1,877,575
Packing	191,442	84,808	1,647,275	740,168
Soles and heels	417,955	138,632	3,040,023	960,041
Thread	94,481	124,319	978,941	1,249,939
Rubber bands and erasers	83,349	59,426	591,041	430,575
Other rubber manufactures	.....	177,679	.....	1,611,196
Totals	.....	$6,090,252	.....	$47,450,517
Rubber toys and balls	.....	$14,279	.....	$118,536
Rubber balloons *gross*	44,663	$61,131	349,764	$457,801

Imports of Crude Rubber Into the United States by Customs Districts

	*September, 1927 Pounds	*September, 1927 Value	Nine Months Ended *September, 1927 Pounds	Nine Months Ended *September, 1927 Value
Massachusetts	2,065,483	$695,248	36,252,924	$13,321,777
St. Lawrence	.....	.....	6,864	2,265
Buffalo	804	314	25,765	9,716
New York	68,479,238	23,143,435	642,422,241	235,195,333
Philadelphia	1,391,981	620,967	7,411,806	2,898,946
Maryland	1,730,869	553,221	20,008,143	7,194,841
New Orleans	.....	.....	2,057	227
Los Angeles	764,656	246,192	16,276,602	5,954,931
San Francisco	151,016	51,243	3,329,391	1,351,031
Oregon	11,200	3,792	704,859	273,505
Washington	.....	.....	112,000	44,240
Dakota	.....	.....	28	10
Michigan	.....	.....	910	325
Chicago	.....	.....	500	128
Ohio	.....	.....	4,182,028	1,496,654
Colorado	.....	.....	974,400	358,561
Totals	74,595,247	$25,314,412	731,910,518	$268,102,490

*Including latex, dry rubber content.

Compounding Ingredients Market

IN the ten months ended October 31 the production of automobiles totaled 3,072,915 or 724,153 less than in the corresponding period of 1926. This accounts for a falling off of nearly 3,000,000 in tire production. Tire companies are operating, however, on good seasonal schedules and many of them are very busy. Activity in other lines of rubber products is progressing steadily without overcrowding factory facilities.

ACCELERATORS. The demand is growing for accelerators suitable for low temperature vulcanization, particularly for ultra accelerators that can be compounded with least danger of scorching.

ANTI-OXIDANTS. Anti-oxidants are the subject for much research activity but no new developments have been announced in the past month.

BENZOL. The output of benzol production declined in November due to slackening of the manufacture of coke. The demand from the rubber trade increased but prices are unchanged.

CARBON BLACK. Fair movement on current prices is reported. Also improved demand and firm prices. The outlook indicates higher prices for next year. Announcement has been made of a Barbour carbon black, the product of a new patented process. The material is said to exert less retarding effect on accelerators and give greater tensile and reinforcing to rubber.

DEGRAS. This material is attracting the favorable interest of rubber manufacturers because of its value in carbon black compounding.

LITHARGE. Trade has been from hand-to-mouth. Demand fair and prices unchanged.

LITHOPONE. Contracts are being booked for the first half of 1928 at prices not yet announced.

MINERAL RUBBER. This standby of the rubber manufacturer is steadily gaining in volume of output to meet the consuming demand.

SOLVENT NAPHTHA. Production has fallen off due to reduction in the coking industry. Conditions are unsettled and price developments are awaited.

STEARIC ACID. The rubber consuming outlet is steadily developing as the appreciation of the value of stearic acid as a stabilizer of cure becomes more widespread among rubber compounders.

ZINC OXIDE. The rubber industry consumption of zinc oxide is seasonal. Spot business is fair and prices are considered low, with the zinc metal showing more strength.

New York Quotations

November 26, 1927

Accelerators, Inorganic

Lead, carbonate	*lb.*	$0.08½	@
Lead, red	*lb.*	.09¾	@
sublimed white	*lb.*	.07¾	@
sublimed blue	*lb.*	.07¾	@
super-sublimed white lead	*lb.*	.08¼	@
Lime, R. M. hydrated	*ton*	12.50	@
Litharge	*lb.*	.08¾	@
Magnesia cal., light	*lb.*	.05	@
calcined, extra light	*lb.*	.30	@
calcined, heavy	*ton*	75.00	@
magnesium, carb., light	lb.	.06	@ .07
Orange mineral A.A.A	*lb.*	.11¾	@

Accelerators, Organic

A-7	*lb.*	.65	@ .85
A-11	*lb.*	.70	@ .95
A-16	*lb.*	.65	@ .85
A-19	*lb.*	.70	@ .95
Aldehyde ammonia	*lb.*	.65	@ **.70**
B. B.	*lb.*		@
Captax	*lb.*		@
Crylene, hard form	*lb.*	.70	@
Paste	*lb.*	.50	@
Di-ortho-tolylguanidine	*lb.*	.85	@ .90
Diphenyl guanidine	*lb.*	.68	@ .72
Ethylidine aniline	*lb.*	.60	@ .65
Formaldehyde aniline	*lb.*	.38	@ .42
P. A. C.	*lb.*	.08½	@ .09
Grasselerator 102	*lb.*	.62½	@ .67½
552	*lb.*	4.45	@
808	*lb.*	1.05	@ **1.35**
833	*lb.*	1.55	@ 1.75
Heptene	*lb.*		@
Hexamethylene tetramine	*lb.*	.62½	@ .67½
Lithex	*lb.*	.18	@ .20
Methylene dianiline	*lb.*	.37	@
Monex	*lb.*	3.25	@
No. 999 lead oleate	*lb.*	.14	@ .159
Phenyl orthotolyl guanidine	*lb.*	.76½	@ .81
Piperidine pentamethylene dithio carbamate	*lb.*	4.45	@ 4.60
R. & H. 40	*lb.*	.50	@ .55
50	*lb.*	.50	@ .55
Safex	*lb.*	1.20	@ 1.25
Super-sulphur, No. 1	*lb.*		@
No. 2	*lb.*		@
Tensilac No. 39	*lb.*	.55	@ .60
No. 41	*lb.*	.65	@ .70
Thermlo F	*lb.*	.50	@ .55
Thionex	*lb.*		@
Thiocarbanilid	*lb.*	.26	@ .28½
Trimene	*lb.*		@
base	*lb.*		@
Triphenylguanidine	*lb.*	.65	@ **.70**
Tuads	*lb.*		@
Vulcanex	*lb.*		@
Vulcanol	*lb.*		@
Vulcone	*lb.*	.70	@
Z-88	*lb.*	.75	@ 1.00
Zimate	*lb.*		@

Acids

Acetic 28% (bbls.)	*100 lbs.*	3.37½	@ 3.62½
glacial (carboys)	*100 lbs.*	12.41	@12.66
Sulphuric, 66°	*100 lbs*	1.375	@

Alkalies

Caustic soda, solid	*lb.*	$0.029	@

Anti-Oxidants

Age-Rite, powder	*lb.*		@
resin	*lb.*		@
Antox	*lb.*	.77	@
Neozone	*lb.*	.74	@
V. G. B	*lb.*		@

Colors

BLACK

Bone	*lb.*	.07	@ .21
Carbon (see Comp. Ing.)			
A. & W. nonfli No. 1	*lb.*	.40	@
No. 2	*lb.*	.25	@
Drop	*lb.*	.06	@ .10
Lampblack (commercial)	*lb.*	.09	@

BLUE

A. & W. blue	*lb.*	1.25	@ 5.00
Du Pont, N	*100 lbs.*	1.35	@
Marine, A. C	*100 lbs.*	1.30	@
5 R.	*100 lbs.*	1.00	@
2 G.	*100 lbs.*	.90	@
Prussian	*lb.*	.31	@ .35
Ultramarine	*lb.*	.06	@ .30

BROWN

Sienna, Italian, raw	*lb.*	.05	@ .12½

GREEN

A. & W. green	*lb.*	1.25	@ 3.00
Chrome, light	*lb.*	.27	@ .31
medium	*lb.*	.28	@ .31
dark	*lb.*	.30	@ .33
Du Pont, A. C	*100 lbs.*	3.00	@
4 G.	*100 lbs.*	.60	@
G. L.	*100 lbs.*	.30	@
Y. L.	*100 lbs.*	.75	@
Oxide of chromium	*lb.*	.38	@

ORANGE

Du Pont, 2 R	*100 lbs.*	1.40	@
R. X.	*100 lbs.*	1.30	@
Y. O.	*100 lbs.*	1.60	@

RED

A. & W. red	*lb.*	.75	@ 3.50
purple	*lb.*	2.00	@ 4.00
Antimony, golden, No. 40	*lb.*	.22	@ .25
No. 60	*lb.*	.16	@ .20
golden 15/17%	*lb.*	.16	@ .20
T. K. "Special" 1%	*lb.*		@
Pentasulphide 15/17%	*lb.*		@

Colors—*(Continued)*

Antimony

Crimson, R.M.P. No. 3	*lb.*	$0.50	@
Sulphur free	*lb.*	.55	@
T. K. 15/17%	*lb.*		@
7-A.	*lb.*	.35	@
Z-2	*lb.*	.22	@
Vermilion, No. 5	*lb.*		@
No. 15	*lb.*		@
Du Pont, R. I	*100 lbs.*	2.00	@
6 B.	*100 lbs.*	1.10	@
Brilliant A. C	*100 lbs.*	1.05	@

Iron Oxides

bright pure domestic	*lb.*	.12	@ .14
bright pure English	*lb.*	.14	@
bright reduced English	*lb.*	.10½	@ .11
bright reduced domestic	*lb.*	.10	@
Indian (maroon), pure domestic	*lb.*	.11	@
Indian (maroon), pure English	*lb.*	.10½	@ .11
Indian (maroon), reduced English	*lb.*	.09	@ .10
Indian (maroon), reduced domestic	*lb.*	.08	@
Oximony	*lb.*	.13¾	@
Spanish red oxide	*lb.*	.04	@
Venetian reds	*lb.*	.02	@ .06
Vermilion, English quicksilver	*lb.*	1.85	@ 1.90

WHITE

Lithopone	*lb.*	.05½	@ .05⅞
Azolith	*lb.*	.05¼	@ .05¾
Grasselli	*lb.*	.05½	@ .05¾
Sterling	*lb.*		@
Zinc Oxide			
AAA (lead free)	*lb.*	.06½	@
Azo (factory):			
ZZZ (lead free)	*lb.*	.06½	@ .07
ZZ (leaded)	*lb.*	.06⅝	@ .07⅛
Z (8% leaded)	*lb.*	.06⅝	@ .07⅛
French Process			
Green seal	*lb.*	.10¾	@
Red seal	*lb.*	.09¾	@
White seal	*lb.*	.11⅞	@

YELLOW

A. & W. yellow	*lb.*	2.00	@ 4.00
T. K. sulphide	*lb.*	.65	@
Cadmium sulphide	*lb.*	1.30	@ 2.00
Chrome	*lb.*	.17	@ .20
Du Pont N	*100 lbs.*	4.00	@
R. R	*100 lbs.*	1.55	@
Grasselli cadmium	*lb.*	1.50	@
Ochre, domestic	*lb.*	.01½	@ .02¼
Oxide, pure	*lb.*	.10½	@
Zinc imported	*lb.*	.23	@

New York Quotations

November 26, 1927

Compounding Ingredients

Aluminum flake (sacks c.l.)	ton	$21.85	@$24.50
(sacks l.c.l.)	ton	24.50	@
Ammonium carbonate powd.	lb.	.11	@
lump	lb.	.10¼	@
Asbestine	ton	13.40	@14.50
Barium, carbonate	ton	51.00	@55.00
dust	lb.		@
sulphate, dry	lb.		@
Barytes, imported	ton	27.00	@34.00
dry ground, white	ton	16.00	@
dry ground, off color	ton	12.00	@
No. 1 Missouri, water ground and floated, St. Louis	ton	21.60	@23.00
Basofor	lb.	.04½	@
Blanc fixe, dry	lb.	.04½	@
pulp	ton	60.00	@
Carbon Black			
Aerfloted arrow	lb.	.08	@ .12
Compressed	lb.	.07½	@ .11½
Uncompressed	lb.	.07	@ .11
Micronex	lb.	.08	@ .12
Carrara filler	lb.	.01¾	@
Chalk, precipitated	lb.	.04¼	@ .04¾
Clay, Blue Ridge, dark	ton		@
Blue Ridge, light	ton		@
China	lb.	.02	@
Dixie	ton		@
Langford	ton		@
Mineral flour (Florida)	ton	20.00	@23.00
Perfection	ton	14.00	@
Suprex	ton	13.00	@26.00
Cotton flock, black	lb.	.09½	@ .12
light-colored	lb.	.10	@ .12
white	lb.	.10½	@ .27
Fossil flour	lb.	.02½	@
Glue, high grade	lb.	.23	@ .27
low grade	lb.	.19	@ .23
Infusorial earth	lb.	.02½	@
Mica, amber (fact'y)	ton	100.00	@
Pumice stone, powd	lb.	.02½	@ .04
Rotten stone (bbls.)	lb.	.02½	@ .04½
Soap bark	lb.	.16	@ .17
Soapstone	ton	15.00	@22.00
Talc, domestic	ton	15.00	@25.00
French	ton	18.00	@22.00
Pyrax A	ton		@
B	ton		@
Thermatomic carbon	lb.		@
Titanox	lb	.10	@ .10½
Velvetex	lb.	$0.04	@$0.07
Whiting:			
Commercial	100 lbs.	.85	@ 1.00
English, cliffstone	100 lbs.	1.50	@
Quaker	ton		@
Snow white	ton	12.00	@23.00
Sussex	ton		@
Westminster Brand	100 lbs.		@
Witco (c.l.) (fact'y)	ton	12.00	@
Whiting, imp. chalk	100 lbs.	1.00	@ 1.25
Paris White, Eng. Cliff.	100 lbs.	1.50	@ 3.50

Factice—See Rubber Substitutes

Mineral Rubber

Fluxrite (solid)	lb.	.05½	@
Genasco (fact'y)	ton	50.00	@52.00
Gilsonite (fact'y)	ton	37.14	@39.65
Granulated M. R.	ton		@
Hydrocarbon, hard	ton		@
Hydrocarbon, soft	ton	28.00	@34.00
Ohmlac Kapack, M. R.	ton	40.00	@90.00
M-4	ton	175.00	@
Paradura (fact'y)	ton	62.50	@65.00
Pioneer, M. R., solid (fac.)	ton	42.00	@
M. R. granulated	ton	52.00	@
Robertson, M. R., solid (fact'y)	ton	34.00	@38.00
M. R. gran. (fact'y)	ton	34.00	@80.00

Oils

Mineral	gal.	.18	@
Spindle	gal.	.25	@
Kerosene	gal.	.17	@
Rapeseed	gal.	.84	@
Red oil, distilled	gal.	.72	@
Rubber process	gal.	.28	@

Rubber Substitutes or Factice

Black	lb.	.08	@ .14
Brown	lb.	.08	@ .15
White	lb.	.09	@ .16

Softeners

Burgundy pitch	lb.	.04¾	@
Corn oil	lb.	.11½	@
Cotton oil	lb.	.10¾	@
Cycline oil	gal.	.28	@ .37
Degras	lb.	.04	@ .04½
Fluxrite (fluid)	lb.	.05	@
Palm oil (Lagos)	lb.	.09	@
Palm oil (Niger)	lb.	.08	@
Palm oil (Witco)	lb.	.08½	@

Softeners—*(Continued)*

Petrolatum	lb.	$0.05¾	@
Pigmentar	gal.	.33	@ .39
Pine oil	gal.	.69	@
Pine tar (retort)	bbl.	14.00	@
Plastone	lb.	.36	@
Rosin K	bbl.	8.25	@
Rosin oil	gal.	.36	@
Rubtack	lb.	.08½	@
Tackol	lb.	.09	@ .15
Shellac, orange	lb.	.70	@
Stearex	lb.	.12	@ .16
Stearic acid (double press'd)	lb.	.13¾	@ .12¾

Solvents

Benzol (90%, 7.21 lbs. gal.)	gal.	.26	@ .28
Carbon bisulphide (99.9%, 10.81 lbs. gal.) (drums)	lb.	.05	@ .06
tetrachloride (99.7%, 13.28 lbs. gal.) (drums)	lb.	.06¾	@
Gasoline No. 303			
Tankcars	gal.	.14	@
Drums, c. l.	gal.	.25	@
Drums, l. c. l.	gal.	.27	@
Solvent naphtha	gal.	.40	@
Turpentine, spirits	gal.	.51½	@ .52½
steam distilled	gal.	.47	@ .49

Vulcanizing Ingredients

Sulphur			
Velvet flour (240 lb. bbls.)	100 lbs.	2.95	@ 3.50
(150 lb. bags)	100 lbs.	2.60	@ 3.15
Soft rubber (c.l.)	100 lbs.		@
(l.c.l.)	100 lbs.		@
Superfine commercial flour			
(210 lb. bbls.)	100 lbs.	2.55	@ 3.10
(100 lb. bags)	100 lbs.	2.20	@ 2.80
Tire brand, superfine	100 lbs.		@
Tube brand, velvet	100 lbs.		@
Vandex	lb.		@
(See also Colors—Antimony)			

Waxes

Beeswax, white, com.	lb.	.35	@
carnauba	lb.	.38	@ .50
ceresine, white	lb.	.12	@
montan	lb.	.07	@ .07½
ozokerite, black	lb.	.27	@
green	lb.	.28	@
Paraffin			
122/124 white crude scale.	lb.	.03	@
124/126 white crude scale.	lb.	.03½	@
120/122 fully refined	lb.	.05¾	@
125/127 fully refined	lb.	.06	@

TESTING SET

A very convenient chemical set for testing soluble iron and oxidation of baryta white is being distributed in the interest of the C. P. De Lore Co., St. Louis, Missouri. The set comprises two small vials with rubber stoppers carrying glass droppers. Vial No. 1 contains a weak solution of potassium ferrocyanide a drop of which on the ground sample will give a blue coloration if soluble iron is present. Vial No. 2 contains ammonia water, a drop of which applied to the sample, promptly neutralizes the free sulphuric acid content and shows its true and final color under oxidation. These testing sets are being distributed by Joseph A. McNulty, 114 Liberty street, New York, N. Y., agent for the De Lore company.

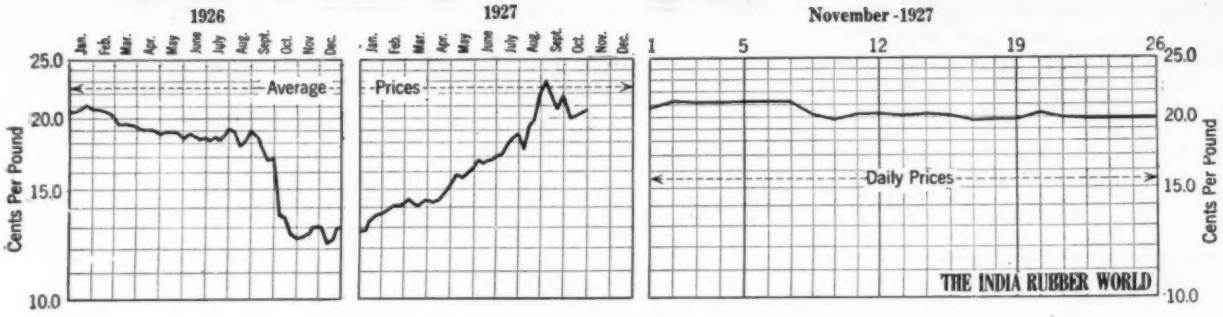
FIG RUBBER AND ITS PROPONENT

A chance remark about the possibilities of fig rubber made by Dr. Frederick Osius, 1551 Morton avenue, Pasadena, California, to a reporter interviewing him on a different matter occasioned a flurry on the Rubber Exchange in New York and caused researchers here and abroad to overhaul their data on caoutchouc in moraceous growths. The doctor has in his yard a 40-year-old fig tree yielding the panaché or green and white streaked fruit, plentiful in Spain but very rare on the Pacific Coast, and from the latex he extracted the sample of rubber about which he spoke to the reporter. What he really said was that the latex assayed a better quality and quantity of rubber apparently than that of other fig trees, even comparing favorably with *Ficus elastica*, the well-known decorative rubber plant and original source of Rambong rubber.

Dr. Osius has been fairly besieged with letters asking for chemical analysis, cured and uncured tests, requests for samples and offers from promoters. He states that he is in no position to consider the commercial side of fig rubber and has no hope or desire to exploit it. The doctor is a botanist and rubber chemist. He founded the Hygienic Rubber Works of Muskegon, Michigan, and his uncured rubber compounds for dental plates had a wide domestic and foreign sale. At one time he specialized also in making rubber ears, noses, and other bodily parts on surgeons' orders from all parts of America and Europe. In botanical experiments he found a way of injecting coal tar dyes into the circulatory system of trees, and also suggested the coloring in some such way of the latex of rubber trees to get delicate tinctorial effects not possible in compounding or which would be unaffected by heat and chemicals in vulcanization.

RSL MOLD SOLUTION

RSL mold solution is a water soluble material for lubricating molds, platens, etc. It allows the molds to be opened easier and facilitates the removal of the cured articles. The solution is prepared by dissolving one part of the dry material in 20 parts of water either hot or cold. This solution is brushed over the hot mold surfaces and the evaporation of the water deposits a thin film on the mold. At the temperature of vulcanization this film melts in its water of crystallization forming a syrup which effectually prevents the rubber from sticking to the metal. It is not advisable to use the solution too frequently because the chemical will increase in amount to the point where discoloration and marking of the goods may occur.



Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton

Market for Cotton and Fabrics

AMERICAN COTTON. The price for spot middling cotton on November 1 was 20.75 cents as compared with 21.80 cents last month. In the interval prices averaged around 20½ cents most of the time. In well informed market circles the opinion has been expressed that a material advance in cotton will take place before the first of January.

The government crop report of November 9 indicating that the crop will be 12,842,000 bales was a distinct disappointment to the outstanding long interest. Its publication caused a sharp break in prices. The Census Report on ginnings prior to November 1 led to the belief that three quarters of the crop had been ginned to that date, which was not thought probable. Consumption is considered to have proceeded on the same scale as last year but is expected to decrease as the mills adjust themselves to higher cost cotton from the present crop.

EGYPTIAN COTTON. The basis on all extra staples continues remarkably firm. In Alexandria speculation is still looking for higher prices and any signs of weakness are quickly counterbalanced by bull speculation. Until November 26 Egyptians were considerably dearer than their equivalent American staples. On the other hand, demand for American staples continues to narrow with small steady business at concessions from the sellers. Any big buying of American staples would clean up the cheap cotton and raise values nearer to a parity with Egyptians.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. The market on these lines is steady and seasonal with limited supplies in consumers' hands. Fabric prices are fluctuating with cotton prices. The market is expected to be irregular until after the holidays and yearly inventory season are past. Following these a higher market is anticipated on both staples and cotton.

RAINCOAT FABRICS. Raincoat fabrics are inactive. The trade will not show anything new until after the first of the year. At present they are just completing their orders on leatherette and making a few high color plaid coats for the Christmas trade.

SHEETINGS. Business for the past month has passed through a very dull stage, again experiencing hand-to-mouth buying. There has been some talk of curtailment of manufacturing but such a plan depends largely upon the respective mill conditions. Prices have fallen off but at the same time there have not been many buyers availing themselves of the lower prices. Most purchases have been for prompt delivery indicating establishment of the policy of planning inventories to current needs.

TIRE FABRICS. In the past 30 days the general situation has

New York Quotations

November 26, 1927

Drills

38-inch 2.00-yard	*yard*	$0.18½ @
40-inch 3.47-yard		.10⅞ @
50-inch 1.52-yard		.24⅛ @
52-inch 1.90-yard		.19½ @
52-inch 2.20-yard		.16⅞ @
59-inch 1.85-yard		.19½ @ .20

Ducks

38-inch 2.00-yard S. F.	*yard*	.19 @
40-inch 1.45-yard S. F.		.25½ @
72-inch 1.05-yard D. F.		.38 @
72-inch 16.66-ounce		.41⅝ @
72-inch 17.21-ounce		.43 @
MECHANICAL		
Hose and belting	*pound*	.36 @
Specials		.40 @
TENNIS		
52-inch 1.35-yard	*yard*	.28½ @

Hollands

RUBBER TRADE SPECIAL		
R. T. 3 A.		
31-inch	*yard*	.20 @
40-inch		.25 @
50-inch		.45 @
RED SEAL		
36-inch		.15½ @
40-inch		.16½ @
50-inch		.25 @
GOLD SEAL		
40-inch, No. 72		.21 @
40-inch, No. 80		.22 @

Osnaburgs

40-inch 2.35-yard	*yard*	$0.15¼ @
40-inch 2.48-yard		.14⅞ @
40-inch 3.00-yard		.12⅜ @
37-inch 2.42-yard		.15¼ @

Raincoat Fabrics

COTTON		
Bombazine 60 x 48	*yard*	.11¾ @
Bombazine 64 x 60		.12¼ @
Plaids 60 x 48		.13 @
Plaids 48 x 48		.11¼ @
Surface prints 60 x 48		.12¾ @
Surface prints 64 x 60		.13¾ @
Print cloth 38½-inch, 64 x 60		.08¼ @

Sheetings, 40-inch

48 x 48, 2.50-yard	*yard*	.13¾ @ .14
48 x 48, 2.85-yard		.12 @ .12¼
64 x 68, 3.15 yard		.13 @
56 x 60, 3.60-yard		.11 @
44 x 48, 3.75-yard		.09½ @ .09¾

Sheetings, 36-inch

48 x 48, 5.00-yard	*yard*	.07¼ @
40 x 44, 6.15-yard		.06½ @ .06¾

Tire Fabrics

SQUARE WOVEN 17¼-ounce		
Egyptian, karded	*pound*	@
Peeler, karded		@
BUILDER 23/11		
Peeler, karded		$0.47 @
BUILDER 10/5		
Peeler, karded		.40 @
CORD 23/5/3		
Egyptian, combed	*pound*	@
Egyptian, karded		@
Peeler, karded, 1 1/16-in.		.47 @
CORD 23/4/3		
Peeler, karded	*pound*	@
CORD 23/3/3		
Peeler, karded	*pound*	.54 @
CORD 13/3/3		
Peeler, karded	*pound*	.42 @
CORD 13/3/3		
Peeler, karded	*pound*	.42 @
LENO BREAKER		
8-oz. Peeler, karded	*pound*	.46 @
10-oz. Peeler, karded		.46 @
CHAFER		
9.5-oz. Peeler, karded	*pound*	.48 @
12-oz. Peeler, karded		.47 @
14-oz. Peeler, karded		.46 @

changed but little except that inquiries have diminished and the business booked has declined in quantity. These conditions are customary at this season of the year. Competition for such business as is offered is if anything keener than ever. Fabric prices are below parity with cotton.

The Cotton Outlook

Effect of Humidity on Cotton

At the Annual Meeting of the National Association of Cotton Manufacturers, Boston, Massachusetts, A. E. Stacey, Jr. presented a paper which brought out several points of particular interest as quoted below:

From the practical standpoint of the mill man the regain curves are of value between relative humidities of 50 per cent to 85 per cent and in a majority of cases 75 per cent will be the upper limit. It should be noted that cotton is relatively weak at low humidities, increasing in strength with the rising relative humidity and reaching the maximum at approximately 75 per cent. From here on the strength falls off.

It might be expected that cotton, after being mercerized, would have a different regain than the natural fiber. This, however, is not the case. There is, however, a slight variation between the bleached and the unbleached fiber.

Our investigations indicate that the fabrication of materials containing rayon as a mixture should be conducted at a humidity lower than those ordinarily maintained in mills handling only natural textile fibers. From the results of some tests on rayon it appears that there is a sudden diminution of resistance to stretch at 62 per cent relative humidity. This would mark the upper limit of relative humidity at which rayon can be successfully prepared for fabrication.

Definite standards of relative humidities for the different departments of the mill have been set. These are, no doubt, based on long experience of successful operation under these conditions. In the last few years, however, there has been a decided tendency to speed up all operations, with a resultant increase in horsepower for driving the machines. Where work is being done on the fibers, there is an equivalent amount of heat being added to the fibers and as the rate of work is increased, the heat in the fibers is increased.

This heat is carried away by the air in contact with the fibers. Its temperature is increased and its relative humidity lowered.

Through this effect the regain of the fibers corresponds to a lower relative humidity than that of the atmosphere of the room. The proper regain in the fibers, and the corresponding relative humidities to be maintained were, no doubt, correctly established for the old operating conditions, but little work has been done to determine the "spread" between the normal regain point and that actually obtained in practice, under more recent high speed operation.

In some cases the writer has found this "spread" to be over a 5 per cent relative humidity, so it was necessary to carry a relative humidity 5 per cent higher in the room than that corresponding to normal regain of the fiber. In this day of high overhead and labor charges, everything should be done to assist in a maximum production from the mill. From the study of the above problem, it would seem that good results might be obtained along these lines.

Influence of Humidity on Cotton

A recent paper in the *Journal of the Textile Institute* describes some experiments to determine the effect of humidity on the breaking strength of single cotton fibers. An investigation was made to explain, if possible, the reason for the increase in strength in cotton yarns with the increase in moisture content.

The increase in strength may be due to the actual increase of the strength of the fibers or it may be caused by a change in the structure of the yarn. Although the actual strength of the fiber may not increase, the strength of the yarn may result from the increased clinging power of the fibers to each other due to the changes in their elastic properties. It seemed to the authors, however, more probable that the combination of the two effects is responsible for the increase in the strength.

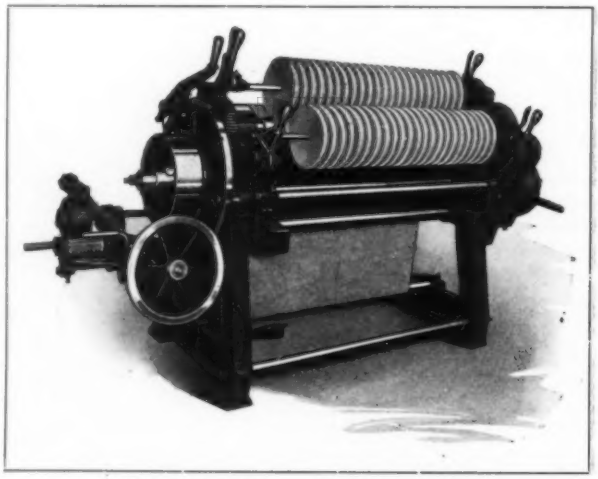
The experiments showed that the breaking strength of single fibers does, in a general way, increase with the increase in humidity but the effect is comparatively small. The results on some varieties of cotton seemed to indicate that the maximum strength is obtained at about 80 per cent relative humidity but this point is not necessarily maximum for all cotton fibers. All of the results tended to show a decrease in the amount of strength added by humidity at about 66 per cent relative humidity. All of the results indicated that above 70 per cent relative humidity the effect of humidity on strength is negligible. The cotton fiber at its maximum strength is apparently about 20 per cent stronger than in the bone-dry state. The bone-dry strength was obtained by extrapolation and not from actual test.

Cotton Exports

Special dispatches to the *Daily News Record*, New York, state that there has been heavy cotton business with the Far East, Japan and Russia. The Japanese have been buying good grade short cotton, and the Russians have bought heavily of inch and 1 1/32 staple in strict low and middling cotton. In fact, the bulk of the export sales recently have been to the Russians. Liverpool has bought in a small way, and so has Bremen, but outside of these markets, there has been no foreign business.

Machine for Cutting Shoe Foxing

Rubber shoe foxing is the narrow ribbonlike strip of calendered sheet rubber used as a binding strip to unite the bottoms and uppers of tennis and other types of rubber footwear. For many years foxing was universally cut by hand but in the larger rubber shoe factories it is cut by power on the style of machine pictured in the illustration. This is the modern method of slitting certain classes of materials, including rubber and rubberized



Camachine Slitter and Roll Winder

fabrics. The machine operates on the familiar score-cut principle by which the slitter wheel spring-pressed against the cutter backing roller revolves by friction as the web passes. In so doing the slitting wheels separate the material whether fabric, paper, rubber or foil or a combined rolling and clearing motion which causes a clean smooth accurate cut.

The machine pictured is provided with two friction driven winding shafts on which the rolls are wound staggered alternately—Cameron Machine Co., 61 Poplar street, Brooklyn, New York.

EXPORTS OF RUBBER BOOTS AND SHOES SHOW A GAIN OF 3.4 PER cent during January-June, 1927, over the same period for 1926. Figures, taken from *Our World Trade*, give a total of 3,501,000 for 1927 and 3,385,000 for 1926.

CRUDE RUBBER IMPORTS DURING JANUARY-JUNE, 1927, AMOUNTED to $184,713,000, a loss of 42.6 per cent from the value for the same period of 1926, which reached a total of $321,988,000, according to *Our World Trade*. As crude rubber declined 33 cents a pound, the decrease is only in value, the 500,000,000 pounds imported showing a gain of eight per cent.

Crude Rubber Arrivals at New York as Reported by Importers

Plantations

	Cases
October 12. By "Steel Traveller," Far East.	
H. A. Astlett & Co.	1,850
October 15. By "Cabo Mayor," Europe.	
General Rubber Co.	100
October 17. By "City of Bedford," Far East.	
H. A. Astlett & Co.	3,742
Hood Rubber Co.	*250
The Meyer & Brown Corp.....pkgs.	*120
Charles T. Wilson Co., Inc.	1,363
October 17. By "Minnewaska," London.	
H. A. Astlett & Co.	255
Baird Rubber & Trading Co., Inc.	275
Littlejohn & Co., Inc.	1,156
The Meyer & Brown Corp.....pkgs.	*381
October 17. By "Mississippi," Europe.	
General Rubber Co.	1,038
October 17. By "Ryndam," Europe.	
General Rubber Co.	100
October 18. By "City of Delhi," Far East.	
H. A. Astlett & Co.	330
Baird Rubber & Trading Co., Inc.	1,160
General Rubber Co.	356
Haldane Bierrie & Co., Inc.	150
Littlejohn & Co., Inc.	1,290
The Meyer & Brown Corp.....pkgs.	260
Poel & Kelly, Inc.	238
Raw Products Co.	100
Charles T. Wilson Co., Inc.	338
October 18. By "Comeric," Far East.	
H. A. Astlett & Co.	782
Baird Rubber & Trading Co., Inc.	800
Paul Bertuch & Co., Inc.	200
General Rubber Co.	932
Haldane Bierrie & Co., Inc.	60
Littlejohn & Co., Inc.	3,569
The Meyer & Brown Corp.....pkgs.	695
The Meyer & Brown Corp.....pkgs.	*110
H. Muehlstein & Co., Inc.	97
Poel & Kelly, Inc.	480
Raw Products Co.	350
Rogers Brown & Crocker Bros., Inc.	350
Charles T. Wilson Co., Inc.	112
October 19. By "Pres. Garfield," Far East.	
H. A. Astlett & Co.	580
Baird Rubber & Trading Co., Inc.	1,956
General Rubber Co.	4,899
Littlejohn & Co., Inc.	6,762
The Meyer & Brown Corp.....pkgs.	1,835
H. Muehlstein & Co., Inc.	1,107
Poel & Kelly, Inc.	*275
Poel & Kelly, Inc.	1,260
Rogers Brown & Crocker Bros., Inc.	120
Rogers Brown & Crocker Bros., Inc.	*112
Charles T. Wilson Co., Inc.	837
October 21. By "Volendam," Far East.	
H. A. Astlett & Co.	58
General Rubber Co.	137
October 23. By "Caronia," Europe.	
Littlejohn & Co., Inc.	821
Charles T. Wilson Co., Inc.	1,325
October 24. By "Adriatic," Europe.	
Littlejohn & Co., Inc.	239
October 24. By "Laconia," Europe.	
Littlejohn & Co., Inc.	511
October 24. By "Media," Far East.	
Baird Rubber & Trading Co., Inc.	598
General Rubber Co.	1,010
Littlejohn & Co., Inc.	323
H. Muehlstein & Co., Inc.	580
Poel & Kelly, Inc.	355
October 24. By "Minnesota," Europe.	
Littlejohn & Co., Inc.	6,764
The Meyer & Brown Corp.	407
Poel & Kelly, Inc.	518
Rogers Brown & Crocker Bros., Inc.	549
Charles T. Wilson Co., Inc.	496
October 25. By "American Shipper," London.	
Baird Rubber & Trading Co., Inc.	104
H. Muehlstein & Co., Inc.	190
October 26. By "Mentor," Far East.	
H. A. Astlett & Co.	1,630
Baird Rubber & Trading Co., Inc.	1,254
General Rubber Co.	2,250
Haldane Bierrie & Co., Inc.	250
Littlejohn & Co., Inc.	3,157
The Meyer & Brown Corp.....pkgs.	1,855
The Meyer & Brown Corp.....pkgs.	*165
H. Muehlstein & Co., Inc.	697
H. Muehlstein & Co., Inc.	*45
Poel & Kelly, Inc.	301
Rogers Brown & Crocker Bros., Inc.	1,100
Charles T. Wilson Co., Inc.	141
October 27. By "Knowsley Hall," Far East.	
General Rubber Co.	165
The Meyer & Brown Corp.....pkgs.	28
October 28. By "Javanese Prince," Far East.	
H. A. Astlett & Co.	862
Baird Rubber & Trading Co., Inc.	580
General Rubber Co.	6,335
Hood Rubber Co.	*373
Littlejohn & Co., Inc.	6,409
The Meyer & Brown Corp.....pkgs.	1,544
H. Muehlstein & Co., Inc.	1,102
Poel & Kelly, Inc.	61
Rogers Brown & Crocker Bros., Inc.	*50
Rogers Brown & Crocker Bros., Inc.	547
Charles T. Wilson Co., Inc.	1,605
October 29. By "Blommersdyk," Far East.	
H. A. Astlett & Co.	1,141
Baird Rubber & Trading Co., Inc.	107
General Rubber Co.	3,738
Haldane Bierrie & Co., Inc.	100
Hood Rubber Co.	*608
Littlejohn & Co., Inc.	2,580
The Meyer & Brown Corp.....pkgs.	1,123
The Meyer & Brown Corp.....pkgs.	*117
H. Muehlstein & Co., Inc.	1,102
H. Muehlstein & Co., Inc.	*435
Poel & Kelly, Inc.	724
Rogers Brown & Crocker Bros., Inc.	1,074
Charles T. Wilson Co., Inc.	3,088
October 29. By "Veendam," Amsterdam.	
H. A. Astlett & Co.	90
Haldane Bierrie & Co., Inc.	99
Littlejohn & Co., Inc.	160
October 30. By "Albert Ballin," Hamburg.	
Haldane Bierrie & Co., Inc.	300
October 31. By "Andania," Europe.	
Littlejohn & Co., Inc.	3,550
October 31. By "Celtic," London.	
Baird Rubber & Trading Co., Inc.	203
Littlejohn & Co., Inc.	116
October 31. By "London Mariner," London.	
Baird Rubber & Trading Co., Inc.	244
October 31. By "Minnetonka," Europe.	
H. A. Astlett & Co.	150
General Rubber Co.	829
Haldane Bierrie & Co., Inc.	213
Littlejohn & Co., Inc.	851
The Meyer & Brown Corp.....pkgs.	250
November 1. By "American Banker," London.	
Baird Rubber & Trading Co., Inc.	1,293
Haldane Bierrie & Co., Inc.	257
The Meyer & Brown Corp.....pkgs.	109
H. Muehlstein & Co., Inc.	390
November 1. By "Nortonian," London.	
Hood Rubber Co.	*101
Littlejohn & Co., Inc.	56
Rogers Brown & Crocker Bros., Inc.	*226
November 1. By "Tuscania," Far East.	
General Rubber Co.	358
Littlejohn & Co., Inc.	2,948
November 2. By "City of Kimberley," Far East.	
Baird Rubber & Trading Co., Inc.	330
General Rubber Co.	560
Haldane Bierrie & Co., Inc.	200
Littlejohn & Co., Inc.	204
The Meyer & Brown Corp.....pkgs.	85
H. Muehlstein & Co., Inc.	1,400
Poel & Kelly, Inc.	280
November 3. By "City of Bath," Far East.	
H. A. Astlett & Co.	1,962
Baird Rubber & Trading Co., Inc.	1,695
General Rubber Co.	2,034
Haldane Bierrie & Co., Inc.	377
Littlejohn & Co., Inc.	4,387
The Meyer & Brown Corp.....pkgs.	976
The Meyer & Brown Corp.....pkgs.	*55
H. Muehlstein & Co., Inc.	530
Poel & Kelly, Inc.	*250
Poel & Kelly, Inc.	180
Rogers Brown & Crocker Bros., Inc.	21
Charles T. Wilson Co., Inc.	160
November 3. By "Pres. Harrison," Far East.	
Baird Rubber & Trading Co., Inc.	1,200
Paul Bertuch & Co., Inc.	200
General Rubber Co.	1,645
Haldane Bierrie & Co., Inc.	768
Littlejohn & Co., Inc.	4,150
The Meyer & Brown Corp.....pkgs.	565
H. Muehlstein & Co., Inc.	768
Poel & Kelly, Inc.	132
Raw Products Co.	250
Rogers Brown & Crocker Bros., Inc.	*350
Charles T. Wilson Co., Inc.	168
November 4. By "Malakand," Far East.	
H. A. Astlett & Co.	400
Baird Rubber & Trading Co., Inc.	*132
Baird Rubber & Trading Co., Inc.	528
General Rubber Co.	1,408
Littlejchn & Co., Inc.	574
The Meyer & Brown Corp.....pkgs.	820
Poel & Kelly, Inc.	627
Raw Products Co.	329
Rogers Brown & Crocker Bros., Inc.	224
Charles T. Wilson Co., Inc.	112
November 4. By "Mercier," Europe.	
Littlejohn & Co., Inc.	1,499
November 7. By "Baltic," Liverpool.	
Baird Rubber & Trading Co., Inc.	136
Littlejohn & Co., Inc.	48
The Meyer & Brown Corp.....pkgs.	90
November 7. By "Carmania," Europe.	
General Rubber Co.	371
Littlejohn & Co., Inc.	4,058
The Meyer & Brown Corp.....pkgs.	330
November 7. By "Priam," Far East.	
H. A. Astlett & Co.	402
General Rubber Co.	3,693
Haldane Bierrie & Co., Inc.	260
Littlejohn & Co., Inc.	1,217
The Meyer & Brown Corp.....pkgs.	840
H. Muehlstein & Co., Inc.	693
Poel & Kelly, Inc.	171
Charles T. Wilson Co., Inc.	441
November 8. By "Minnekahda," London.	
H. A. Astlett & Co.	152
Baird Rubber & Trading Co., Inc.	568
General Rubber Co.	907
The Meyer & Brown Corp.....pkgs.	103
H. Muehlstein & Co., Inc.	160
November 9. By "Breedyk," Rotterdam.	
The Meyer & Brown Corp.....pkgs.	76
November 9. By "Steel Seafarer," Far East.	
H. A. Astlett & Co.	1,374
Baird Rubber & Trading Co., Inc.	1,000
General Rubber Co.	6,491
Littlejohn & Co., Inc.	310
The Meyer & Brown Corp.....pkgs.	120
H. Muehlstein & Co., Inc.	400
Poel & Kelly, Inc.	50
November 11. By "Rotterdam," Far East.	
Haldane Bierrie & Co., Inc.	241
November 12. By "Missouri," London.	
Baird Rubber & Trading Co., Inc.	*219
November 12. By "Patagonier," Europe.	
Littlejohn & Co., Inc.	495
November 13. By "Scythia," Europe.	
Littlejohn & Co., Inc.	151
Poel & Kelly, Inc.	1,005
Charles T. Wilson Co., Inc.	48
November 14. By "American Farmer," Far East.	
H. Muehlstein & Co., Inc.	37
November 14. By "Cedric," Liverpool.	
Baird Rubber & Trading Co., Inc.	365
The Meyer & Brown Corp.....pkgs.	206
November 14. By "City of Evansville," Far East.	
H. A. Astlett & Co.	2,671
Baird Rubber & Trading Co., Inc.	3,495
General Rubber Co.	2,860
Hood Rubber Co.	285
Littlejohn & Co., Inc.	8,278
The Meyer & Brown Corp.....pkgs.	3,398
H. Muehlstein & Co., Inc.	1,270
H. Muehlstein & Co., Inc.	*640
Poel & Kelly, Inc.	1,380
Raw Products Co.	330
Rogers Brown & Crocker Bros., Inc.	*50
Rogers Brown & Crocker Bros., Inc.	410
Charles T. Wilson Co., Inc.	392
November 14. By "Comliebank," Far East.	
General Rubber Co.	286
Haldane Bierrie & Co., Inc.	150
Littlejohn & Co., Inc.	484
November 14. By "Karimoen," Far East.	
H. A. Astlett & Co.	508
Baird Rubber & Trading Co., Inc.	183
General Rubber Co.	5,431
Haldane Bierrie & Co., Inc.	115
Hood Rubber Co.	*543
Littlejohn & Co., Inc.	2,038
The Meyer & Brown Corp.....pkgs.	1,267
H. Muehlstein & Co., Inc.	279
Poel & Kelly, Inc.	405
Raw Products Co.	484
Rogers Brown & Crocker Bros., Inc.	194
Charles T. Wilson & Co., Inc.	1,185
November 14. By "Lancastria," Europe.	
General Rubber Co.	190
Littlejohn & Co., Inc.	1,512
The Meyer & Brown Corp.....pkgs.	1,682
Charles T. Wilson Co., Inc.	4,080
November 14. By "Sawopla," Far East.	
Haldane Bierrie & Co., Inc.	50
November 15. By "Dacre Castle," Far East.	
H. A. Astlett & Co.	2,183
Baird Rubber & Trading Co., Inc.	1,015
Adolph Hirsch & Co., Inc.	50
H. Muehlstein & Co., Inc.	300
H. Muehlstein & Co., Inc.	*136
Poel & Kelly, Inc.	417
Raw Products Co.	500
Rogers Brown & Crocker Bros., Inc.	300

*Arrived at Boston.

	Cases
November 16. By "City of Benares," Far East.	
H. A. Astlett & Co.	224
Poel & Kelly, Inc.	174
November 17. By "Pres. Monroe," Far East.	
H. A. Astlett & Co.	1,020
Haldane Bierrie & Co., Inc.	400
Poel & Kelly, Inc.	785
Rogers Brown & Crocker Bros., Inc.	*250
Rogers Brown & Crocker Bros., Inc.	300
November 17. By "Silverash," Far East.	
H. A. Astlett & Co.	120

Africans

October 24. By "Laconia," Europe.	
Littlejohn & Co., Inc.	39
November 9. By "La Bourdonnais," Europe.	
Littlejohn & Co., Inc.	792
November 13. By "Scythia," Europe.	
Littlejohn & Co., Inc.	614

Balata

October 20. By "Haiti," Far East.	
Middleton & Co., Ltd. ....bales	103
October 25. By "Hubert," Brazil.	
General Rubber Co. ....bales	6
November 9. By "Swineburne," Brazil.	
General Rubber Co. ....bales	8
November 16. By "Cottica," Far East.	
Middleton & Co., Ltd. ....bales	145

Guayule

October 17. By "Mexico," Mexico.	
Continental Rubber Co. of New York....	560
October 26. By "Tela," Mexico.	
Continental Rubber Co. of New York....	2,180
November 3. By "Pecos," Mexico.	
Baird Rubber & Trading Co., Inc.	182
November 4. By "Cauto," Mexico.	
Continental Rubber Co. of New York....	1,620
November 9. By "Camaguey," Mexico.	
Continental Rubber Co. of New York....	2,181
November 14. By "Mexico," Mexico.	
Continental Rubber Co. of New York....	1,120

Rubber Latex

	Gallons
November 17. By "Pres. Monroe," Far East.	
Rogers Brown & Crocker Bros., Inc.	*250

*Arrived in Boston.

Paras and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Miscel. Cases
October 24. By "Hubert," South America.					
H. A. Astlett & Co.	605	33	184	262	...
Paul Bertuch & Co., Inc.	32	...	45	...	...
Paul Bertuch & Co., Inc.	*359	...	...	...	...
General Rubber Co.	580	...	112	65	†35
Littlejohn & Co., Inc.	746	...	169	...	...
The Meyer & Brown Corp.	32	...	...	130	...
November 1. By "Dominic," South America.					
H. A. Astlett & Co.	99	...	44	50	...
November 9. By "Swinburne," South America.					
H. A. Astlett & Co.	1,089	38	169	283	...
Paul Bertuch & Co., Inc.	136	...	...	...	...
Paul Bertuch & Co., Inc.	*422	...	...	...	...
General Rubber Co.	613	20	163	215	‡2
Littlejohn & Co., Inc.	556	...	245	337	...
The Meyer & Brown Corp.	...	...	89	...	...

* Biscuit. † Cameta. ‡ Mixed.

United States Crude and Waste Rubber Imports for 1927 by Months

	Plantations	Paras	Africans	Centrals	Guayule	Manicobas and Matto Grosso	Total 1927	Total 1926	Balata	Miscellaneous	Waste
January ....tons	42,646	2,378	269	299	144	...	45,736	38,697	106	1,508	447
February	25,326	1,668	213	203	190	...	27,600	34,067	119	935	953
March	33,114	1,176	206	253	329	...	35,078	42,677	82	674	531
April	45,843	1,822	351	229	418	10	48,673	32,678	109	1,317	631
May	33,735	1,872	197	399	364	2	36,569	30,411	68	1,075	1,056
June	31,444	1,057	123	251	317	2	33,194	30,107	85	1,092	230
July	37,060	871	46	388	295	7	38,667	37,087	66	1,030	62
August	31,195	986	29	504	345	9	33,068	25,982	25	882	475
September	31,064	1,117	43	210	364	...	32,798	38,132	40	1,444	220
October	29,758	1,104	22	158	267	1	31,310	28,114	42	775	146
Total, 10 months, 1927....tons	341,185	14,051	1,499	2,894	3,033	31	362,693	.....	742	10,732	4,751
Total, 10 months, 1926....tons	316,847	10,664	3,185	4,109	3,121	26	.....	337,952	425	9,555	4,736

Compiled from statistics supplied by the Rubber Association of America, Inc.

TIRE INVENTORY — PRODUCTION — DOMESTIC SHIPMENTS

Inventory, production and shipments on all types of pneumatic casings and inner tubes declined during the month of September, 1927, and are, with the exception of inventory for pneumatic casings, below the figures for the same period in 1926. Solid and cushion tires also show a decline in September below the August figures, the totals for production and shipments likewise falling below those for September, 1926, with inventory slightly higher during the month in 1927.

Consumption of cotton for casings, tubes, solid and cushion tires during September was less than in August, but crude rubber consumption, for the same commodities, shows an increase.

	September, 1927		
	Inventory*	Production	Shipments
Pneumatic casings—all types	7,291,294	3,616,390	4,287,655
Inner tubes—all types	10,133,407	4,238,593	5,068,413
Balloon casings	3,927,917	1,807,924	2,132,318
Balloon inner tubes	5,152,658	1,599,987	2,046,955
High pressure cord casings	3,151,501	1,755,119	2,051,117
High pressure inner tubes	4,980,749	2,638,606	3,021,458
Solid and cushion tires	170,470	35,654	45,881

COTTON AND CRUDE RUBBER CONSUMPTION, SEPTEMBER, 1927

	Pounds
Cotton fabric	13,997,978
Crude rubber	37,341,213

*As of September 30, 1927.
Rubber Association figures representing 75 per cent of the industry.

EXPORTS OF RUBBER FOOTWEAR

Department of Commerce has prepared the following comparative statistics of (1) United States exports of (a) rubber boots, (b) rubber shoes and (c) canvas rubber soled shoes; (2) Canadian exports of (a) rubber boots and shoes, and (b) canvas rubber soled shoes; and (3) United Kingdom exports of rubber boots and shoes of all kinds, during the first nine months of 1927. These three countries are the only ones reporting the number of rubber boots and shoes exported, and together supply well over 50 per cent of the rubber footwear shipped in international trade each year.

First Nine Months	United States Pairs	Canada Pairs	United Kingdom Pairs	Total Pairs
1926	6,546,461	5,088,790	2,080,008	13,715,259
1927	5,939,601	5,178,361	2,252,544	13,370,506

TIRES OF U. S. GROWN RUBBER

The Continental Rubber Co. of New York is about to conclude a series of comprehensive road service tests on tires made of 100 per cent United States grown rubber. These were undertaken to determine the value of this rubber in comparison with the highest quality of plantation grown Hevea. Very gratifying results are being shown by the tires made from the domestic grown rubber. Release of full data on the tests is promised on completion of the tests when concluded.